# INDEX

A1 Electric Washing Machines, order from Czechoslovakia, 312
A55 motor car (Austin), 104
Abbe, E., document on welfare at Carl Zeiss Foundation, 199
Abbott, M. B., on structural analysis by digital computer, 666
Abbreviations of associations, institutions, research and trade associations, 501
Abelson & Co. (Engineers), 14d, tower cranes Abelson & Co. (Engineers), Ltd., tower cranes, 226

Aberdeen, Government assistance for new factories, in, 363
Able (monkey in rocket), 726, 727
Abrasive materials, Nylon gloves for protection against (British Nylon Spinners), 453
Absolute co-ordinates in machine-tool design,

Absorption bands, infra-red, intensity of (bibliography), by R. G. Gillis, 713

Abstracts, nuclear science, annual index to, 745

— Plastics, 311

— Rheology, note on, 61

AC-3 aircraft, magnetometer equipped, for oil prospecting (Hunting Geophysics, Ltd.), 296

prospecting (Hunting Geophysics, Ltd.), 296

AC-Delco, new factory at Liverpool, 16
Academy of Technical Sciences (Denmark), Preparation of samples for microscopic investigation (book), 253; durability and maintenance of concrete structures on Danish railways, by A. Jeppesen, 384

Acalor, Ltd., anti-corrosive cement at Heinz factory at Kitt Green, 578; pavoir floors at Heinz factory at Kitt Green, 578

ACC-Vickers-Babcock, Ltd., formation of, 231

Accelerator, linear, with beam scanner (Metropolitan-Vickers), 491

— Stanford University, 772

— Particle, at AWRE, 768

— for Europe, 391

— Large, throughout the world, 772

— Metropolitan-Vickers work on, 771

— Van de Graaff, tandem, at Atomic Energy of Canada, Ltd., 771

— See also Generator, electrostatic; Proton

- See also Generator, electrostatic; Proton synchrotron Post-deflection, for cathode-ray tube (Mullard), 88

lard), 88

Accelerometer in inertial navigation, 679

Accidents, atomic plant, analysis of, 674

— Reactor, Soviet, 395

— Boiler room in frigate, 605

— Cement industry, 671

— Crane, 235

— Natural gas tank rupture, 232

— Prevention Group, London Building and Engineering Contractors'. See London Building

— Progress, 701 Partial Progress, 701

Radiation, Vinca, recovery of victims of, 302

Rate reduction, 701

Road, Protective headgear in, 392

Remedy for, 644

Research at Road Research Laboratory,

- Research at Road Research Laboratory,
298
- US, problems of, 368, 680
- US, statistics, 368
- Worsening position of, 235
- Windscale reactor, radioactivity survey after,
237
- Research at Road Research Laboratory,
208

Accles & Pollock, Ltd., tubes in new metals, 504; production planning, 526
Accumulator. See Battery
Accuratool capstan lathe for seated operator (Dowding & Doll), 132
ACF Industries Inc. See Kaiser Engineers
Acheson Colloids, Ltd., nuclear applications of "dag" colloidal graphite, 47; Emralon resin-bonded dispersions of ptfe, 379
Acid, teeth erosion by, investigation on insurance benefit for, 733
Ackery, E. M., on electric floor heating, 663, 64
Acoustic ceiling, illuminated, Siemens Ediswan Calotex, 589
— Pyramids, noise-absorbing (Marley), 653

absorbing (Marley), 653 Acta Polytechnica Scandinavica, 713
Activating agents, surface, 747
Acton Trust, Creative Leadership in a State

Service (survey on hospital administration), 270

tion), 270
Actuator for remote control of valves (Limitorque Valve Controls, Ltd.), 422
— for servo or non-servo operation (Hydraulics & Pneumatics, Ltd.), 487
Ad. Auriema, Incorp., differential voltmeter, 390; multi-switch indicator for checking temperatures, 455
Adams, C. C., on space flight (book), 61
Addison Electric Co., Ltd., Schmidt rope tension gauge, 455
Addison, H., pump users' handbook (book), 217

Adhesive, "Aerodux 185," 706

— Aerolite, 707

— Resin based, Bondarc, for rigid joints in long rails, 32

— Twinstik, for name plates (Evode, Ltd.), 309

Adjusto-Spede fractional h.p. drive (Heenan & Froude), 327

Administration Business, Institute of, See Administration, Business, Institute of. See

Industrial, courses on, 385
Administrators, cross-fertilisation of, 270
Engineer, place of, in British industry, 385

Admiralty Oil Laboratory, miniature oil velocity indicator, 82
Advertisements control regulations, 660

Advertising agency, technical—what it is, what it offers (book), 57

— Association annual conference, speech at, by

It offers (book), 57
 Association annual conference, speech at, by Sir K. Hague, 659
 Campaign, introducing employees to (Projectile & Engineering Co.), 796
 by Post Office, 699
 Advisory Committee on Further Education for Commerce, report of, 397
 AEI-John Thompson Nuclear Energy Co., Ltd., direct cycle natural circulation BWR reactor for ship propulsion, 639; access hours permissible for boiling-water reactor for ship propulsion, 674; See also Berkeley atomic power station
 AEI Lamp & Lighting Co., Ltd., fluorescent lighting for control room of Chapel Cross atomic power station, 491
 Aerial, "criss-cross," in radio telescope, 121
 Long-wave, at Ongar Radio Station, 307
 Radar, metal honeycomb sandwich (A. V. Roe), 375
 Rhombic, at Ongar Radio Station, 307

Rhombic, at Ongar Radio Station, 307

— for spectra of Sun's radio waves study, 121

121
Spike, for guided missile (Armstrong-Whitworth), 113
Aero-engine. See Aircraft engine
Aero Research, Ltd. See CIBA (ARL), Ltd.
Aerodromes, disused, hardcore for roadmaking from 543
Aerodynamics of aircraft. Vol. I, Part I, by H. Schlichting and E. Truckenbrodt (book) 802
High speed, and jet propulsion by H. W.

H. Schilchithing and E. Frückenbrödt (600k)
802

— High speed, and jet propulsion, by H. W. Emmons (review), 713

— Theoretical, by L. M. Milne-Thomson (book), 746

Aerodux 185 adhesive, 706

Aeroelasticity—retrospect and prospect, by Prof. A. R. Collar, 17

Aeroflot, London-Moscow air service, 458, 700

Aerolite adhesive, 707

— Glued timber beams, Cawood Wharton, 707

Aeronautical dictionary, Agard's, 61

— Research Laboratories, damage to centripetal air turbine, 127

— Sciences, American Institute of. See American Institute

— Society, Royal. See Royal

Aeronautics, Cranfield College of. See Cranfield

Aeroplane. See Aircraft

— Directory of British Aviation, 1959 (review)

Aeroplane. See Aircraft

— Directory of British Aviation, 1959 (review),

- Engines. See Aircraft engine: Turbine, gas
Aerosol filler machine, Presil, 198
- Packaging for domestic use, 448
AFL-CIO, 35 hour week claim in, 429
Africa, Economic Commission for. See

Economic

Africa, Economic Commission for. See

Economic

Heavy-duty roads in, 671

Shortage of skilled manpower in, 170

South. See South Africa

West, observers at International Labour Conference (Geneva), 765

Aga Dictating Machine Co., Agavox Telediction system, 698; Model C dictating machine, 698

Agard's Aeronautical Dictionary, 61

Agavox Telediction centralised dictating system (Aga Dictating Machine Co.), 698

AGR reactor. See Atomic reactor, advanced gas-cooled

Agricultural Engineering, National College of. See National College

— Industry, batteries standard, plea for, 458

— Machinery, economic use of, 227

— Exports of, 111-112

— Industry, effect of European Common Market on, 112

— Industry, position and prospects of, 111

— Syndicate purchase of, 535

— Tractors. See Tractors

Agriculture, mechanisation of, discussion on, 227

Agriculture, mechanisation of, discussion on,

227

Radioisotopes in, conference on, 537

See also Farm: Irrigation
Ahmad, Dr. V., on A.C. dynamic braking of induction motors, 590
Ahmadi Hospital, Kuwait, packaged water chilling sets for (York Shipley), 781
Aide-Memoire Martinenq des Constructions Navales, by E. Giboin, J. Legris, and A. Rialland (book), 311
Aigrain, P., progress in semi-conductors. Vol. III (review), 801
Aims of Industry, Ltd., 259
AIMO. See Audio Instructed Manufacturing Operation
Ainsley, J. W., on need for financial assistance for non-ferrous mining, 330
Air Automation, air control valve with neoprene diaphragm, 717

Bearing in balancing machine, 179

"Air Care" protections (Curtics Wright) 695

— Bearing in balancing machine, 179

"Air-Car" prototype (Curtiss-Wright), 695

Air, clean. See Clean Air

— Compressed. See Compressed Air; Pneu-

Compressors, axial-flow, by J. H. Horlock

(book), 61

Diesel driven, Jenbach, with air cooling (Chamberlain Plant, Ltd.), 728

for Explorer diesel-electric locomotive,

compressor, foundations at Hawker Aircraft factory at Squires Gate, 214 - Gasifier-turbine-driven, 49

- Gasifier-turbine-driven, control system

Gasifier-turbine-driven, safety precautions, 51 Hydrovane, for dental drills (Alfred Bullows & Sons, Ltd.), 230

Mackay DAC130, sales promotion for, 627

62/
— Oil-free (Williams & James), 809
— Power Vane (Consolidated Pneumatic Tool Co.), 634
— Rotary, oil-flooded, design development of (Broom & Wade), 522
— Two-stage, Broomwade (Broom & Wade), 485

— Warning equipment for (Teddington Industrial Equipment), 192
Conditioning, dual-duct, high-velocity, at Brightside Heating & Engineering Co., Ltd., 158

— Fourimment for transport (1 Stone), 134

Brightside Heating & Engineering Co., Ltd., 158

- Equipment for transport (J. Stone), 134

- and refrigeration, by W. H. Severns and J. R. Fellows (book), 154

- for strip mill control cabin at Stewarts & Lloyds, Ltd., 557

- Transmatic electronic controller for, design development of (Teddington), 522

- Trends in, 525

- Unit for deck mounting on ships (Nortis Warming Co.), 762

Air Control Installations, Ltd., Fumeguard hood (trade publication), 283

- Valve with neoprene diaphragm (Air Automation), 717

- Coolers, tubular, for Priest Rapids Dam (Heenan & Froude), 114

- Cylinder, midget (A. Schrader's Son), 534

- Filter panel, Super-Vee (Vokes), 760

- for pressurised assembly cabinets, 415

- Throw-away, Ozotez (Ozonair), 381

- Flow in straight ducts and pipes, friction charts for, by R. H. Young and J. M. Gasiorek (book), 746

- Force, Royal. See Royal

- United States. See United States

- Heater. See Heater

- House with PluViaC skin (Gourock Ropework Co.), 610

Air motors, Rotomotor, remote control equipment for (Maxam Power, Ltd.), 420

- Pollution, effect on health, 351

- by oil refinery, discussions on, 11

- from power stations in fog, CEGB-

by oil refinery, discussions on, 11

from power stations in fog, CEGB-Fairey tests, 30

by solid particles, by Dr. D. H. Grindell

— By solid particles, by Br. B. H. Offideli 350
— See also Smoke
Air Products (Great Britain), Ltd., tonnage oxygen plant at Brymbo Steel Works, 658
Air-Rail, Ltd., monorail project for London Airport, 387
— Registration Board, investigation of altimeter readings, 298; modification of presentation of sensitive altimeters, 403
— Service to Moscow, 458, 700
— Screws. See Propellers
— Traffic control officers, pay claim by, 73
— Control, problem of, by E. W. Pike, 67
— Transport competition to shipping, 766
— of motor cars (Vauxhall), 57
— Pilots, training of, 458
— Position and prospects of, 40
— Supersonic airliner for, by R. C. Sebold, 215
— Turbine, See Turbine

— Turbine. See Turbine
— Union, effect on BEA, 764. See also 763
— See also Atmosphere
Aircraft, AC-3, magnetometer equipped, for oil prospecting (Hunting Geophysics, Ltd.), 296

Aerodynamics Vol. I. Part I. by H.

Aerodynamics. Vol. I, Part I, by H. Schlichting and E. Truckenbrodt (book), 802 Aerodynamics.

Argosy freighter/passenger, 74, 523

— AW650 freighter, for Riddle Airlines, 369
Arrow supersonic aircraft, Avro, Canadian
Government discontinues work on, 290
Avro, 748, turbo, prop. airlines prop. 162 Avro 748 turbo-prop airliner project, 103
Boeing 707 airliners, fail-safe tests on, 623

— 707 Intercontinental airliner, 456

— 707 Intercontinental jet airliner for BOAC, 434

BOAC, 434

Britannia airliner, Operations Development department for investigating problems on (Bristol Aircraft, Ltd.), 787

Britannic freighter, description of, 274

SC-5 strategic freighter (Short Bros. & Harland), 226

Cabins, pressurising of, 215

Canberra bomber for Science Museum, 536

Bomber, successor for, 39. See also 2

Caravelle jet airliner, airworthiness certificate and progress of, 536

Deformable, dynamics of, 17

De-icing system, Spraymat, 749

Djinn black-tip jet helicopter, 536

Ejection seat for escape from submerged aircraft, 278

Electrical equipment with Sundstrand drive

Electrical equipment with Sundstrand drive and brushless alternator (English Electric),

- Electronic equipment, mountings for, 373

Aircraft engine, Conway by-pass turbojet, Air Registration Board's approval, 381 — Dart turboprop, BEA overhaul facilities,

Gas turbine, by A. W. Judge (review), 343
Gas-turbine. See also *Turbine*, gas
Iroquois turbojet, development of (Orenda), 26

Orpheus B Or 12 turbojet, brief details of,

Orpheus 803 turbojet, manufacture under licence by German Federal Republic, 604 Penalty clauses in development contracts

for, 428

Proteus turbo-prop, overhaul life extension, 403

sion, 403

— Proteus turbo-prop, twin cell test bed for, at Nantgarw (BOAC), 95

— Ramjet, for hypersonic aircraft, 656

— Ramjets for Kolibrie helicopter, 88

— Turbine design for, by N. C. Breddy (book), 746

— Turbine, development of, 41

— Tyne turboprop, for Vanguard airliner, 14. See Correction, 75

Exports of, 40-41, 563

— Credit extension for, 163

— Flight testing, transistors for, 742

— Freight lift (Short Bros. & Harland), 809

— Friendship F.27 passenger, undercarriages for (Dowty Equipment, Ltd.), 505

— Fuel, automatic monitor for, 647

— Purity of, Shell research on, 647

for (Dowty Equipment, Ltd.), 505

Fuel, automatic monitor for, 647

— Purity of, Shell research on, 647

— Tanks, Martin, nitrous oxide gas for tracing leaks in, 659

— Water contamination, 647

— Fuelling, hydrant system, 648

— Static electricity in, 648

— Gannet early warning, Spraymat de-icing system for, 749

— Helicopter hangar (Chuter), 579

— Helio Super Courier STOL, 264

— Hercules, static line retriver system for paratroopers on (Lockheed), 374

— Hercules C-130 troop carrier, boundary layer control for (Lockheed Aircraft Corp), 505

— Hovercraft, principle of, 767

— Prototypes (Saunders-Roe), 637

— Hypersonic, hypothetical two-stage "pickaback," with speed of Mach 7, 656

— Industry, American graphite blocks for (Union Carbide), 683

— Change in, by D. W. Douglas, 572

— Diversification in, 41

— Exports for 1958, 2

— French, difficulties of, 163

— Position and prospects of, 40

— Relationship with Government, plea for clarification, by E. C. Bowyer, 2

— Jane's All the World's, 1958-59, by L. Bridgman (review), 474

— Jet airliners, introduction of, 40

— Anti-vibration camera mountings for,

- Airliners, introduction of, 40
- Anti-vibration camera mountings for,

372

— Introduction of, 40

— Services around the world, BOAC and Quantas, 296

— Sound suppressing nozzles for, 456

— Kolibrie twin ram-jet helicopter, 88

— Landing. See Landing

— Lightning, attains Mach 2, 103

— Noise, TU104 airliner at London Airport, 458

— Operation calculations. Bristol team's study.

- 430 Operation calculations, Bristol team's study on, 787 OR 339 strike project, 41 Production conference (I.Prod.E.), 566 Project TSR 2 reconnaissance, 39. See also

Radar identification of, 656
Research Association, supersonic wind tunnel, 187; transonic wind tunnel tests, 187
Rotodyne, vertical-take-off, U.S. orders for

Vertical take-off, world class speed record Secondhand, Ayer-AA deal in, 628 Signalling to ground, 656
Submerged, escape from, 278
Supersonic airliner, detailed design work recommended on, 536

- Airliner, development of, by R. C. Sebold, 215 - Airliners, I.Prod.E. committee recommendations, 566

Airliners, position and prospects of, 566

Transport, discussion in Parliament on,

Tactical support and strike, successor for Canberra, 2

Towing tugs, hydrostatic drive for, 655
TSR2 tactical-strike reconnaissance, 668
TU104 airliner, 700
TU114 Rossiya airliner, 700
Vanguard airliner, 668

And the construction, 14.

See Correction, 75

— Airliner, preparation and testing for airline service, 736

— Airliner, progress on, 536
— Viscount airliner, earning power of, 563
— X-15 upper atmosphere research (North American Aviation), 361
Airlift, new name for American Aviation journal, 553

Airlines, co-operation between, 195

— European Common Market's policy, 195

— Consortium proposal, 763, 764

Airliner. See under Aircraft
Airport, Elisabethville, instrument landing
system (Pye), 604

— Heliport on Battersea bank of River
Thames, 542

— Hong Kong, new runnan opened 428

Hong Kong, new runway opened, 428
Landing. See Landing
Leopoldville, instrument landing system

(Pye), 604

London, FIDO at, 763
Monorail project, 387. See LETTER, 567
Noise of TU104 airliners, 458

- Moscow, Pye aircraft landing system, 755-Prestwick, improvements planned for, 143
San Francisco, Epon asphalt concrete run-

way, 804 Airways, authorised extent of, discussion in Parliament on changes in, 458
Maps, discussion in Parliament on, 458

AKK, atomic power plant projects for (Asea),

Akroyd, T. N. W., on accelerated curing tests on concrete. See Letter, 759 Alacoil aluminium alloy tank heating coils, 250

Alaflor extruded aluminium grating (Archibald Low), 159

Alarm for air compressors, 192

— Fire, automatic, Fidela (Associated Fire Alarms, Ltd.), 32 - Photoelectric, for flow meters (Rotameter),

Albania, economic position, 727
Albion-Cuthbertson Water Buffalo tractor transporter for swamp lands (Albion Motors), 358

Motors), 358
Albion Motors, Ltd., Reiver range of commercial vehicles, 297; Albion-Cuthbertson "Water Buffalo" transporter for swamp lands, 358
Albion Reiver haulage and tipper chassis (Leyland Motors), 634
Albu, A., review of History of technology. Vol. 5: late 19th century, 216
Alcan interlocking aluminium ingots (Aluminium Union, Ltd.), 183
ALCO Products Inc., modified version of

ALCO Products Inc., modified version of APPR-1 for US Army, 268; high-temperature gas-cycle graphite moderated pebble-bed reactor (PBR) under study, 734 Aldington, Dr. J. N., on Sir Joseph Swan and development of the electric lamp, 231

Aldridge Careers Forum, 457 ALFRED electronic reading machine (EMI Electronics), 218

Algemene Kunstzijde Unie, negotiations with British Industrial Plastics, 251 Allday, William, & Co., Ltd., oil free blowers,

Allen, P. W., & Co., fluorescent work lights,

Allen, W. H., Sons and Co., Ltd., reduction gearbox for marine Proteus gas turbine, 52; self-regulating alternator, 133; water circulating pumps for Chapel Cross atomic power station, 490; diesel generator sets for AGR reactor (Windscale), 491

Alley, R. P., physical laws and effects (book), 746

Allgaier windmill, 679

Allgaer windmill, 679
Allied Product Co., Ltd., Cup-O-Matic bulk milk machine, 325; Squash-O-Matic drink-vending machines, 325
Allis-Chalmers Manufacturing Co., superheated atomic reactor at Sioux Falls, 267; "life-long" lubrication for crawler tractor track group, 479
Alloys binary constitution of by M. Hansen

Alloys, binary, constitution of, by M. Hansen and K. Anderko (review), 154

— Light. See Light Alloy and under specific types of light alloy

Magnetic platinum, Platinax II (Johnson Matthey), 183 - Metals and, vacancies and other point defects in (book), 475

Steel. See Steel — See also under specific type of alloy Allweather Paints, Ltd., Pitan metal primer (trade publication), 586

Alnor Dewpointer dew point meter (Electric Resistance Furnace Co., Ltd.), 808 Alouette helicopter, 536

Alpha class sailing dinghy (Bossoms Boatyard), Thermonuclear research apparatus, 702

ALPR reactor, 463 Alps, Mont Blanc road tunnel through, 494

Road tunnels through, 162, 739

Altair tanker, diesel-engined, 752 Alternating current for dynamic braking of induction motors, by Dr. O. I. Butler and Dr. V. Ahmad, 590 Stress. See Fatigue

Alternator, brushless, for aircraft electrical equipment (English Electric), 296 Gas-turbine, 3 MW, mobile or standby (Bristol Siddeley), 569

for mobile gas-turbine power station for Russia (Ruston & Hornsby), 806 Self-regulating (W. H. Allen), 133

Sets, diesel, for multiple-unit Pullman trains (J. Stone), 134
Turbo, 200 MW, for High Marnham power station (English Electric), 594

Stability limits of, operation tests on, 254 See also Generator

Altimeter readings, investigation of, 298

— Sensitive, modified presentation for, 403 Alumina ceramic, Sintox, 555 See also Chromium-alumina; Molybdenum-

chromium-alumina Aluminium alloys for Cargo Lift vans and trucks (Northern Aluminium Co.), 781

Free cutting, Kynal 11S, 555 Grain carriers (Scammell), 749 Pulleys, flame-plating, for wiredrawing machine, 59. See Letter, 419
Tank heating coils, 250

- Bending (booklet) (ADA), 210

of pipe structures for flexibility, by J. Gascoyne (book), 746 Brass for tank heating coils, 250
Busbars (trade publication), 746 Canning for atomic reactor, 136

Aluminium Co. of America, bid for control of British Aluminium, Ltd., 3; bid for take-over of British Aluminium Co., Ltd., 39. See also *Plain Words*, 34; conclusion of bids for control of British Aluminium Co.,

as construction material, 525
 Aluminium Corp., continuous flash annealing furuace, 633

Development Association, bending aluminium (booklet), 210; competition for aluminium street lighting standards, 560 Effect on ductility of Kanthal iron alloy, 139

Gold-anodised, curtain wall for Hollywood office building, 804

Grating, extruded, Alaflor (Archibald Low), Honeycomb (trade publication), 283

Industry, position and prospects of, 7, 71
Ingots, interlocking, Alcan (Aluminium Union, Ltd.), 183
for insulated cables (booklet), 780

Aluminium, Ltd., reduction in production of primary aluminium, 3
Machining of (trade publication), 746
Nickel alloy, X-8001, in ALPR reactor, 463
Piping for BR.2 reactor, 46

Plant in Valencia (Reynolds), 723 and plywood canopy for Melbourne's music bowl, 610

Producing project, Volta River, Ghana Government's work on 543 Production, reduction in, by Aluminium, Ltd., 3

Rocket fuel, 279 - Street lighting standards, competition for, 560

Superstructure in liner Oriana (Vickers-Armstrongs, Ltd.), 505
Thin, "pull-through" welding gun for (British Aluminium Co.), 503
Tube from roll-formed strip, high-frequency welding of (Elm Engineering), 446
Aluminium Union, Ltd., Alcan interlocking aluminium ingots, 183
Vitreous enamelled, Judgelite, 587
Alva, tube, profile, cutter, (Satura, Industrial)

Alyn tube profile cutter (Saturn Industrial Gases), 534

Amalgamated Engineering Union, strike of maintenance workers at Steel Co. of Wales, Ltd., 48; dispute at Universal Pattern & Precision Co. Ltd. 103; readstion & Precision Co., Ltd., 105; re-election of W. Carron as president, 637; demand for wage increase and shorter hours, 637 Amateur Yacht Research Society, activities of,

America. See North America; South America; United States; Latin America American Airlines, sale of surplus aircraft to

Frederick B. Ayer and Associates, 628 Astronautical Society, Astronautical Sciences Review, 501

American Aviation journal, change of name to Airlift, 553

Chamber of Commerce, remarks on protectionism, by Sir D. Eccles, 354
Concrete Institute, recommended practices for hot weather concreting, 495; revised standard on concrete, 543; meeting in Mexico, preliminary notice, 671
Institute of Aeronautical Sciences, Louis W.

Hill Space Transportation Award to Dr. R. H. Goddard, 207; commercial air transportation beyond the subsonic jets, by R. C. Sebold, 215; journals of, 343

 Public Relations Associations, annual convention (Chicago), 701
 American Railroad Curvelining Corp., Bondarc resin-based adhesive for long rails, 32 Society for Engineering Education, Evalua-

tion of Engineering Education (report), 170 Society for Testing Materials, 1958 book of ASTM standards including tentatives (review), 714

States, Organisation of, activities of, 354 See also *United States* Americium, recovery of, 174

Ammonax printing papers (Hall Harding), 345
Ammonia plants for Chemical Construction
Corp., 391
Amory, Rt. Hon. D. Heathcoat, on Govern-

ment grants for universities, 235

Amplifier, giant high-fidelity, for missile re-search (Westinghouse Electric Corp.), 678 Parametric, semiconductor diodes in, 743 Rotating, by G. Loocke (review), 475

Amplivox, Ltd., noise (trade publication), 216; microphones (trade publication), 474; Sonett hearing aid, 788 Ampol Petroleum, Ltd., Australian-built

tanker for, 16 Amsler, Alfred J., & Co., wear-testing machine, 117; universal static and fatigue testing machine for Secretaria de Comunicaciones y Obras Publicas, 433

Analogue computer. See Computer Methods for process control, 784

Analyser, spectrum, for audio and supersonic frequencies (James Scott & Co.), 808 Transfer function, for testing servo-mechan-isms and control gear (Servo Consultants),

Analysing, data, transistorised system for neutron spectrometry (EMI Electronics),

Analysis, asymptotic methods in, by N. G. de Bruijn (book), 777 — Circuit, of tranmission lines, by J. L. Stewart (book), 184

of coal ash, slag and boiler deposits, by K. Archer et al., 64

- Engineering systems, by R. L. Sutherland (review), 586

- of flow from pipe manifolds, by Dr. E. Markland, 150 of grid frameworks and related structures, by A. W. Hendry and L. G. Jaeger (book),

Nonlinear, introduction to, by W. J. Cunningham (book), 29

Structural, by digital computer, by M. B. Abbott, 666

Analytical design of linear feedback controls, by G. C. Newton, Jr., L. A. Gould, and J. F. Kaiser (review), 252

Anderko, J., on constitution of binary alloys (review), 154 Anderson Construction Co., Ltd., ceiling panels for Heinz factory at Kitt Green, 578 Andre Rubber Co., Raykin Fender of rubber

sandwich construction, 504 Anfimov, S. R., on Anglo-Russian trade, 755 Angel Ore & Transport Co., Milford Haven project, 700

Angel Truck Co., Ltd., Flagship platform trucks, 762 Angle, slotted, universal grid for (Dexion), 685 Anglesey, atomic power station sites in, 303

Anglesey, atomic power station sites in, 303

Anglo-European Exhibitions, Ltd., Teenagers'
Fair (Blackpool), 563

Angus, George, & Co., Ltd., Autoram electromechanical thrust units, 665

Angus-Butterworth, L. M., on Insignia Awards in Technology, 727

Angwin, Sir S., obituary, 568

Annealing, See Heat Treatment Annealing. See Heat Treatment
— Furnace. See Furnace

Annual Register of World Events, 745 Ansafone telephone message recorder (Southern Instruments, Ltd.), 37
Anthony, H. D., scientific books of the 18th century and emergence of modern science,

Anti-corrosion manual, 1958 (book), 184 Vibration mounting. See Mounting Anticlastic shells, lectures by F. Candela on,

A ppearance designer, work of, by T. B. Dunne, 565 Appia 1090 c.c. motor car (Lancia), 329

Appleby-Frodingham Steel Co., new appoint ments, 423
Applied Mechanics Reviews, changes in, 343 Appointments Bureau, Professional Engineers,

APPR reactor, uranium dioxide stainless-steel cermets as fuel components for, 141
Apprentices, American tours for (Plessey Co.),

Cost of training, 635
Further education facilities, 457
in Post Office service, decrease in, 699
Recruitment statistics, 207

Recruitment statistics, 207

Training schemes, problems of, 105

— Tax relief for, 105

— in US, safeguarding interests of, 537

Apprenticeships, criticism of, by R. Steel, 170

— Discussion in Parliament on, 635, 637

— for girls (Plessey Co.), 170

— Government grant for, 635, 637

— Group schemes discussion in Parliament

Group schemes, discussion in Parliament

Need for more, 635, 637 Schemes, need for more (Birmingham Conference), 299 Statistics of girls and boys in, 234

— Training centres, Government, 635, 637 Approvals scheme for electrical industry, 535 APV Paramount, Paralloy Forging Quality

cast pipe fittings, 504

Aquaflash flash distillation plant for sea water (Buckley & Taylor, Ltd.), 229

Arakie, C. M., on tests for motor-car safety belts, 324

Aradite enovy resins, 706

Araldite epoxy resins, 706
Arc-furnace. See Furnace, electric
— Welding. See Welding Archer, K., on analysis of coal ash, 64 Architect and engineer, acknowledgment of, by Prof. J. A. L. Matheson, 664

Engineer collaboration, scholarship study of, 804 — and surveyors' plastics scales, British Standard on, 340
 — in factory design, 565, 576
 Architects, Naval, Institution of. See *Institu*-

Remarks by Frank Lloyd Wright on, 565 Architectural aspects of iron and steel works

buildings, by F. Gibberd, 221 Shells, Candela's, 643. See Co Architecture in Heinz factory at Kitt Green,

Arcon buildings steelwork fabricated in Lagos, - Steel-framed buildings for National Iranian Oil Co., 391
Ardleigh Engineering, Ltd., governors, 101

Argentine, atomic energy programme, 12

— Investment prospects, 354

Arghyropoulos, P. A., Calcul de l'Ecoulement en Conduites Sous Pression on a Surface

Libre (book), 650 Argonne Low Power Reactor. See ALPR National Laboratory, Greek scientists and engineers training at, 46. See LETTER, 228;

removal of plutonium for living organisms, 302; X-8001 aluminium-nickel alloy, 463

Argosy AW650 freighter aircraft for Riddle Airlines, 369 — Freighter/passenger aircraft, 523 Argyriadis, D. A., on container ships, 451 Arithmetic, workshop, by H. A. Darling (book),

Arma Brown gyroscopic compass, 749 Armand, L., resignation as Euratom president,

Armourcast toughened glass, larger sheets of (Pilkington Bros.), 379
Armourclad toughened glass, larger sheets of (Pilkington Bros.), 379

Armourplate toughened glass (trade publication), 377; larger sheets of (Pilkington Bros.), 379 Glass in Rhodes site flow indicator, 569

Armstrong Cork Co., Ltd., Bondarc resinbased adhesive for rigid joints in long rails, 32; Uniphase Cork cork-elastomer gasket material, 210

Armstrong Research and Development Center, resin-bonded adhesive for rigid joints in long rails, 32 Armstrong Siddeley Motors, Ltd., merger with

Bristol Aero-Engines, Ltd., 231

Armstrong Whitworth, Sir W. G., Aircraft, Ltd., description of Argosy freighter/pas-senger aircraft, 74; high-speed rotary sampling switch for air-borne telemetry, 113; spike agrial for guided missile, 113; provisional order for Argosy AW650 freighter aircraft for Riddle Airlines, 369; design and production of Argosy freighter-coach aircraft, 523; material fabrication exhibits, 556

Army, United States. See *United States Army* Aromatic extraction unit, Udex, for Stanlow refinery (Universal Oil Products), 620

Arrow supersonic fighter aircraft, Avro, Canadian Government discontinues work on, ARS Journal, new title of Jet Propulsion, 343

Art and engineering, Plain Words on integra-tion of, 694 and musical interests of engineers, Plain

Words on, 322 Arteriosclerosis treatment, electronic equip-

ment for, 573

Arthurs, J., treatment of water for industrial high-pressure boiler plant, 247

Arts, Royal Academy of. See Royal Academy

Arup, Ove & Partners, new building for CIBA (ARL), Ltd., 707
Asbestos cement, fire protection of structures by (booklet), 804

— Products (Turners Asbestos Cement)

- Products (Turners Asbestos Cement Co.), 452 Roof sheets, Magnum (Universal Asbes-

tos Manufacturing Co.), 683

— Sheet, Turnall plastics washer and protective cap for, 495

Fire protection of structures by (booklet), 804

Friction material, MW48, for oil well drawworks (Ferodo, Ltd.), 780 and ptfe packings and jointings, Lascarflon (Beldam Asbestos), 503 Reinforcement for plastics bearings, 27

Sheeting, Everite (trade publication), 185 Slabs (trade publication), 283 Asea, atomic power projects at, 425 Aseismic reinforcement for Calder Hall type reactor, by Tachu Naito et al., 79
Ash, coal, analysis of, by K. Archer et al., 64
Ashanti frigate, with steam plus gas turbine

Ashby, R. J., on problems in engineering structures (book), 184
Ashmore, Benson, Pease & Co., Ltd., activities

of, 337 Asia, Central, development of, conference on preliminary notice, 450

— South East, increase in Australian trade

Asiatic Society of Bengal, sponsorship of science in India, 300
Aslib, new headquarters of, 123; Engineering Group's visit to Charrington's Anchor Brewery, 377

Asphalt concrete, Epon, for runway, 804
Assembly cabinets, pressurised, Bassaire, 415
Associated Cement Companies of India, association with Vickers Ltd. and Babcock & Wilcox, Ltd., 231
Associated Electrical Industries, Ltd., extended

notice for wage-earners in event of redunnotice for wage-earners in event of redundancy, 48; overseas tour by Lord Chandos, 177; steam plus gas turbines for frigate Ashanti, 434; annual report, 456; new holding companies, 456; Swiss "Rigid" transportable drilling, boring and milling machine, 562; chairman's annual statement, 572; cinema film on electricity generating industry, 756; cinema film on training with AEI, 756; See also AEI; MERLIN reactor; Sceptre

Associated Fire Alarms, Ltd., Fidela automatic fire alarm, 32

Associations, abbreviations of, 501

Associations, abbreviations of, 501

— British Machinery Merchants, change of

name to Association of Industrial Machinery Merchants, 359 of Consulting Engineers, activities of, 489
 of Industrial Machinery Merchants, new name for Association of British Machinery

name for Association of British Machinery Merchants, 359; activities of, 359 of Supervising Electrical Engineers, exhibition at Earl's Court, 326; Annual Dinner; Electrification of British Railways, by Sir B. Robertson, 557; year book and technical guide, 1958-1959 (review), 649; automatic landing, by E. H. Bruce-Clayton, 656

of Teachers in Technical Institutions, annual conference (Leicester), 733 of Technical Institutions, need for post-graduate research, by Sir H. Melville, 331 Technique Maritime et Aeronautique, Annuaire 1958 (review), 310; bulletin cf (book), 746

Aston, A. C., consulting engineer for Heinz factory at Kitt Green, 576
Aston Martin, DBRI/30 sports car in Florida race, 393; motor car chassis fabrication

Astronautical Sciences Review, 501 Astronomical telescope kit, Orion "do it yourself" (W. Ottway & Co., Ltd.), 416

Astronomy, radio, and navigation, by C. M. Cade, 744

Aswan High Dam, Russian agreement on, 34

— Dam, West German consortium investment offer, 34

Asymptotic methods in analysis, by N. G. de Bruijn (book), 777
AT nickel for phenol road tanker, 748
Ateliers de Constructions Electriques de Charleroi, transformer bank for Sweden,

Atkins, C. J., review of Technical Drawing, 342 Atkins, Capt. H. F., on marine nuclear reactor

systems, 792
Atkins, W. S., on foundations to iron and steel

works buildings, 220 Atlas Copco (Great Britain), Ltd., quiet pneumatic screwdriver, 485
Atlas floating 400 ton diesel-electric crane for

Lake Maracaibo oilfields, 595 — Missile in orbit, 3

ENGINEERING, VOL. 187 (1959) Atmosphere, heat treatment. See Heat Treat-Lunar, nature of, 333
Upper, X-15 aircraft for research on (North American Aviation), 361
Atmospheric pollution. See Air Pollution; Clean Air; Smoke
Atoms for Peace Award for Prof. G. C. de Hayesy 47 Atoms for Peace Award for Prof. G. C. de Hevesy, 47

Atoms for Peace Digest, 1956-1958, highlights from (booklet), 80

Atomic bonds in ceramics, by D. A. Robins, 90

Atomic Energy, quarterly journal of Australian Atomic Energy Commission, 463

— Energy Agency, International. See International — Energy Agency, International

— in Argentine, 12

— in Belgium, 12

— in Brazil, 12

Atomic Energy of Canada, Ltd., tandem accelerator, 771

— in Chile, 12

Commission, Australian. See Australian Commission, Australian. See Australian Commission, United States. See United Community, European. See European Consortia in Belgium, 12 Consortia in Italy, 46 Consortia in Japan, 46 Consortia in Norway, 80 - Consortia in Portugal, 110 - in Cuba, 12 - in Czechoslovakia, 12 — in Denmark, 12 Direct conversion to electrical energy, 13, 575 in East Germany, 12
— in Egypt, 12
— Establishment (Trombay, India), activi-- Establishment (Trombay, India), activities of, 301
- Exhibits at Engineering Exhibition, 490
- Exhibitions, UKAEA, 535
- European organisations, 176
- Films at Engineering Exhibition, 490
- in Finland, 12
- in Greece, 46
- Industrial prospects of, conference on (OEEC, Stresa), 176
- Industry, chemical processing in, by Dr. R. Hurst, 172

— Insurance, State settlement of excess claims, 240

— in Israel, 46 - in Italy, 46 in Japan, 46 Medical applications of, research reactor for, 462

– in Mexico, 80

– in Netherlands, 80 in Mexico, 80
in New Zealand, 80
in New Zealand, 80
in New Zealand, 80
in Pakistan, 110
Peaceful Uses of, 2nd International Conference on (Geneva), consolidated report on metallurgy and fuels, by L. M. Wyatt, 106, 136; list of papers presented, 141, 175, 205, 237, 238-239; consolidated report on chemical processing, by Dr. R. Hurst, 172; consolidated report on isotope separation, by F. I. Hurley, 202; consolidated report on radiation protection, by I. S. Eve, 236; consolidated report on reactor safety, by F. R. Farmer, 237
in Poland, 110
Prize, Council of Europe, 176
Products, tariffs on, 176
Programmes, R. McKinney on, 789
Atomic Energy Research Establishment (Harwell), discussion in Parliament on staff losses and increases at, 272; reorganisation of Isotope Division, 395; work of safety branch, 397; atomic light sources, 497
Research at Grenoble, 176

Research at Grenoble, 176 Research in India, 301 Research Institute, Japanese. See Japa-

Research in New Zealand, 80
Safety Precautions, UKAEA, 397
Society, European. See European in West Germany, 12 — World programmes, 12, 46, 80, 110
— See also Atomic power: Nuclear
— Engineering, Course on, 80 - Demonstration experiments in, by Dr. P. H. Price, 141
- Home-study course, 141 Explosions for earth moving, AWRE study, 795

for harbour construction, 206 for oil release from shale beds, 206 Peaceful uses of, 205-206 for rocket propulsion, 206

- Ior rocket propulsion, 206
- in Siberian forest, theory, 637
- Fission, direct conversion to electricity, 13
- Product release from fuels, 238
- Fuel cans, beryllium, development of, 239
- Canning, beryllium for, 412
- Canning, impermeable graphite for, 490
- Consolidated report on, by L. M. Wyatt, 106, 136

Diluted, 141

Elements, behaviour under irradiation, - Element bundle for Hawker Siddeley marine reactor, 674

Elements, burst, detection of, 750 Element, Capricorn's, 130 Element, co-extrusion of, 80

Element, co-extrusion of, 80

Elements, compartmented plate, 140

Element, Dounreay, 335

Elements for EBR-I reactor, 141

Elements for EBWR reactor, 141

Elements for Enrico Fermi reactor, 141

Elements, equipment for detection of faulty (Plessey), 491

Elements, fissile and fertile material in mineral or glass-fibre for, 110

Elements, integral canning methods for, Elements, integral canning methods for,

- Element, longitudinal finned spiral splitter, 137

Elements, manufacture by Rolls-Royce,

Atomic fuel element, polyzonal spiral, 137 - Element for Russian gas-cooled reactor, Element sheaths, detection of defective,

- Elements, sleeved, at Chapelcross, 702
- Element, temperature of, 269
- Element testing by Hawker Siddeley, 303
- Elements, trends, in, 139-140
- Fission-product release from, 238
- Fluid, reactors for, USAEC interest in, 268

For French submarine, 675
Gaseous UF<sub>6</sub>, 735
Hire-purchase terms for, 394
as independent variable of reactor

- as independent variable of reactor design, 238
- for Japanese power station, 427, 492
- Liquid, chemical studies of, 175
- Liquid-metal, 302
- Liquid-metal, advantages of, 313
- Liquid-metal, poisons removal from, 315
- Liquid-metal, problems of, 313
- Liquid-metal, processing of, 315
- Liquid-metal, types of, 314
- Loading-unloading machine for Berkeley atomic power station, 490
- Rods for BICEP reactor, 239
- Rods manufacture by industry, 238 Rods manufacture by industry, 238 Technology, proceedings of conference

on, 394

— See also under specific types

Atomic Industrial Forum, United States. See United States
Light, by Dr. E. J. Wilson and J. D. H.
Hughes, 497

Hughes, 497
— See also Light, radioactive
Physics and Human Knowledge, by N. Bohr (review), 155
— Plant accidents, analysis of, 674
— Power in Australia, prospects of, 463
Atomic Power Constructions, Ltd., member-firms of, 273; contract for Trawsfynydd atomic power staion, 795
— Course on, Imperial College (booklet), 463

463
— in Pakistan, prospect for (report), 531
— Plants, experimental programme for, by
J. Edwards, 460
— Plants, by G. Cahan and P. Treille
(book), 502
— Plant, Hallam, 425
— Plants for marine propulsion, shielding

- Plants for marine propulsion, shielding of, by H, E. Vann, M. L. Weiss and B. Wolfe, 545

Wolfe, 545

— Plant, modular, proposals to USAEC, 13

— Plant, portable, Lockheed, 735

— Plant, portable, PM-1, 735

— Plant, 330 MW (Westinghouse), 267

— Plant with nuclear-fired superheater (Puerto Rico), 79

— Plant, prefabricated, for US Army, 268

— Plant, R3-Adam (Asea), 425

— Plant, R4-Eva (Asea), 426

— Plant, for Saxton (Penn.) (Westinghouse), 267

— Programme, British by Six L Coul

- Programme, British, by Sir J. Cockcroft, 269

Projects at Asea, 425
Prospects for (PEP booklet), 427
Stations, AGR system for, 269
Station, Berkeley, progress of, 206; gas circulator for, 269. See Correction, 395; research laboratories at, 367; ball bearings for reactor servicing machine, 484; fuel loading-unloading machine, 490
Station, Bradwell, auxiliary transformers ordered for, 491; heat exchangers for, 525
Station, Chapel Cross, in operation, 387; centrifugal circulating water pumps for, 490; fluorescent lighting for control room, 491; opening of, 608; contractors for, 608; sleeved fuel elements, 702; storage pond, 702

Stations under construction by CEGB,

Station, design of (GEC), 523
Station, Earnley site, discussion in Parliament on, 535 - Station, Germany, British tenders rejected, 367

Station, Greencastle site survey, 735

Station, Hunterston, progress on, 34; shield construction, 426; Loch Awe construction scheme in association with,

Station for India, Dr. H. J. Bhabha on, - Stations, instrumentation for, by Dr. D. Taylor, 750

D. Taylor, 750

Station for Japan, 427; contract negotiations for, 206; negotiations on, 269; fuel for, 427; earthquake safety precautions, 463; details of, 492

Station, Latina, thermal rating of reactors, 367

Stations, lubricant requirements, 715

Station, Oldbury-on-Severn, site application for 426

cation for, 426

Stations, plutonium production in, discussion in Parliament on, 731

Stations, progress of, 490

Stations, safety in, Plain Words on, 790

Station sites in Anglesey, 303

Station sites investigated by CEGB, 269

Station site investigations on Severn
Estuary, 426

Station sites of CECB populate), 604

Stations, siting of (CEGB pamphlet), 694 Station, Sizewell, marine survey of, 240 Station, for Spain, projected, 80

 Station, Swedish, projected, 80
 Station, Trawsfynydd, contract for Atomic Power Constructions Ltd., 795 Propulsion of icebreaker vessel Lenin, trials

on, 548

Merchant ship (British), discussion in Parliament on, 676

Merchant ships, Dutch research body,

— Merchant ships, Netherlands Foundation for, 80
— Merchant ship Savannah, details of, 548; launching of, 674; proposed schedule of operation, 674; model of reactor plant, 674; radiation level permitted in, 675

Atomic propulsion, naval vessels, 545, 675

— Plant, gas-turbine (General Dynamics Corp.), 735

Plant, weight of, 676
• Reactors for. See Atomic reactors
• of rocket by explosion, 206
• Ships, discussion in Parliament on, 672

- Ships, exhibits at Engineering, Marine, Welding and Nuclear Energy Exhibition,

- Ships, firms interested in, 608
- Ships in Italy, 46
- Ships in Japan, 46
- Ships, operating costs of, by H. W. Bowker, 676

- Ships, position and prospects of, 545 - Ships, progress in, Lloyd's Register report on, 359

Ships, proposals for, 630

Ships, proposals for, 630

Ships, prospects of, by A. J. Taylor, 548

Ships, reactors for. See Atomic reactors

Ships, references to, 548

Ships, shielding in, by H. E. Vann, M. L.

Weiss and B. Wolfe, 545

Ships, systems proposed for, 630, 638

Weiss and B. Wolfe, 545

— Ships, systems proposed for, 630, 638

— Submarine cargo ship Moby Dick, 546

— Submarine cargo vessels, by J. A. Teasdale, 676

— Submarine Dreadnought, 546, 668, 675; floating dock and hull design, 80; reactor plant for, 367; keel laying of, 735

— Submarine, land-based, at Dounreay,675

— Submarines, RN programme, 675

— Submarine Skipjack, 546

— Submarine tanker (Mitsubishi), 675

— Submarines (US), 545

— Tanker, British project, 546

Submarines (US), 545
Tanker, British project, 546
Tanker with gas-cooled reactor (US), 547
Tanker project (Babcock & Wilcox), 547
Tanker project (Vickers), 547
Tanker, reactor design for (Vickers), 638
US Navy, 545
West German work on, 13
Whaling fctory ship, 548
Reactor accident, Soviet, 395
Advanced gas-cooled, for future power stations, 269
Advanced gas-cooled, graphite-moder-

- Advanced gas-cooled, graphite-moder-ated, for tanker project, 546

Advanced gas-cooled, Windscale, diesel generator sets for, 491; refuelling machine contract, 491; for ship propulsion, 639 ALPR, 463

— APPR, uranium dioxide stainless-steel cermets as fuel components for, 141
— Aqueous homogeneous, Westinghouse and Pennsylvania withdrawal from project, 79

Beryllium for, AWRE study, 795 BICEP, special rods for, 239 BN-50, comparison of, 334

BN-50, comparison of, 334
BN-250, comparison of, 334
Boiling heavy water, Halden, joint programme for, 80, 176
Boiling-water, design study proposal invited by USAEC, 268
Boiling-water, with nuclear-fired superheater (Puerto Rico), 79
Boiling-water, Operation Sunrise development programme (General Electric Co. (U.S.)), 426
Boiling-water, for ship propulsion, 548.

Boiling-water, for ship propulsion, 548, - Boiling-water, for ship propulsion, access hours permissible for (AEI-John Thompson), 674

Thompson), 674

— Boiling-water, for ship propulsion, details of (Mitchell-Fairfield-Combustion Engineering), 641, 673

— Borax-4, 426

— Borax-5, for superheater testing, 267

— BR-1 (Belgium), 12

— BR-2 (Belgium), 12, 46

— BR-3 (Belgium), 12, 47

— of Brazil, 12

— Calder Hall type, aseismic reinforcement for, by Tachu Naito et al., 79

— Canning, aluminium, 136

— Canning, beryllium, 139

— Canning magnesium, 136

— Canning materials, 136

— Canning rods, installation by distillation

Canning rods, installation by distillation method, 137

Canning, steel, 138 Canning, zirconium, 137 Chapelcross, 702 Charging mechanisms, lubrication of, 715

Chemistry of, 175 Circulating-fuel, 316 Containment, safety aspects of, 238 Control of, course on, 80

- Control, reutron-sensitive, ionisation chamber for, 751
- Controls, by J. Walker, 686
- Control rod mechanism, lubrication of,

Core arrangement for LMFR, 313
 Core, neutron-flux distribution measurement across, 750

Core processing, 315 of Czechoslovakia, 12

Of Czechoslovakia, 12

— DIDO, high-pressure water loop for, 460

— Direct cycle BWR, for ship propulsion

(AEI-John Thompson), 639

— DR-1 (Denmark), 12

— DR-2 (Denmark), 12

— DR-3 (Denmark), 12 DR3 (Riso), instrumentation for (Ekco),

- DRAGON (HTGC) project at Winfrith Heath, 239, 425; agreement signed for, 395 for *Dreadnought* submarine, 367 Dual-core, light-water moderated, Cor-

nell, 79
- of East Germany, 12
- EBR, melt-down, 237
- EBR-1, comparison of, 334
- EBR-1, fuel element for, 141
- EBR-2, comparison of, 334
- EBR-II, non-aqueous processing for, 174
- EBWR, fuel elements for, 141
- EBWR-2, 426
- EFFBR comparison of 334

EFFBR, comparison of, 334

Atomic reactor, enriched-uranium graphite-moderated, for West Germany, 735

— Enrico Fe mi, fuel element for, 141; comparison of, 334; details of, 336

— EUREKA experiment for water-moderated (Vickers), 462-463

— Fast breeder, Dounreay, comparison of, 334; fuel element, 335; tests on, 335; core skirt fabrication, 366; instrumentation for (CJB), 491

tion for (CJB), 491

- Fast breeder, liquid-metal fuelled, 317
- Fast breeder, PRDC, permit to build but not operate, 47
- Fast, charging of, 335 Fast, comparisons of, 334
Fast, melt-out containment of, 427

Fast, heri-out containment of, 427

Fast, references to, 336

Fast, US, 335

Fast, world examples compared, 334

Fluid-fuel, USAEC interest in, 268

Fluidised breeder, 426

Fuel circuits, design of, 316

G2 electricity for grid from 575

G2, electricity for grid from, 575
Gas-cooled, coupled to reciprocating engine, 427 Gas-cooled, Dragon project, 239, 395,

Gas-cooled, enriched and natural uran-- Oas-cooled, eithered and natural transium compared (Kaiser-ACF), 734

- Gas-cooled, with gas turbine, higher thermal efficiency for, 547

- Gas-cooled, GCR-2 (Oak Ridge), 734

- Gas-cooled graphite moderated, for gas turbine propulsion plant (General Dynamics Corp.) 735

mics Corp.), 735

mics Corp.), 735

Gas-cooled graphite-moderated, for ship propulsion (GEC-Simon-Carves), 639

Gas-cooled graphite moderated, for tanker, model of (Babcock & Wilcox), 547

Gas-cooled, for heavy-water reactor development (USAEC), 425

Gas-cooled, for Japan, 303

Gas-cooled, for Jülich, Germany, 206

Gas-cooled, Kaiser Engineers-ACF Industries programme, 734

Gas-cooled, kinetics of, by Sir J. Cockcroft, 269 croft, 269

Gas-cooled, operating experience, 238
Gas-cooled, for ship propulsion, 793
Gas-cooled, for ship propulsion (General Dynamics Corp.), 676

Gas-cooled, for tanker (US), 547
Gas-cooled, US projects, 734
Gas engine system (Oak Ridge), 427, 734
Gaseous UF<sub>6</sub> fuel for, 735
Graphite blocks for, test rig for, 47
Graphite-moderated, for ship propulsion,

Halden Boiling Heavy Water (Norway), 80, 176

- Heavy-water moderated, design study proposals invited by USAEC, 268

— Heavy-water moderated, gearboxes for control of, 491
— Heavy-water moderated, for India, 269
— Heavy-water moderated, USAEC study of, 47
— Heavy-water moderated. See also

Heavy-water moderated see also Atomic reactor, steam-cooled

Helium-cooled graphite-moderated project of High Temperature Reactor Development Associates, 78

Helium-cooled partially enriched (Kaiser-ACF), 734

HERO experimental for Windsoole 206

HERO experimental, for Windscale, 206 HERO project at Windscale, 239 High-temperature gas-cooled, Daniels-

Boyd, 268

High-temperature gas-cooled, experiments to commence, 141

High-temperature gas-cooled, Japanese Atomic Energy Research Institute, 463

High-temperature gas-cooled, for ship

propulsion (de Havilland), 640

High-temperature gas-cycle graphite moderated pebble-bed reactor (PBR) (Sanderson and Porter-Alco Products), 734 India, 80

Instrumentation of, course on, 80 Instrumentation requirements, 687 Ispra (Italy), operation commenced, 462 in Italy, 46 in Japan, 46 for Japan, Kyushu Co. project, 269 JASON, for research and training, 303,

461, 491 JEEP heavy-water cooled and moderated

— JRR-1 to 3, Japan, 46
— LAMPRE, proposed design for, 303
— LAMPRE-I, at Los Alamos, 318
— LAPRE-2 (Los Alamos), criticality achieved, 492; purpose of, 492
— Liquid-metal fuelled, Babcock & Wilcox

(USA), 302 - Liquid-metal fuelled, heat removal circuits for, 317

 Liquid-metal fuelled, by S. B. Hosegood and P. M. C. Lacey, 313
 Liquid-metal fuelled, internally cooled, - Liquid-metal fuelled, prospects of, 318 - Liquid-metal fuelled, safety of, 317

Liquid-metal fuelled, types of, 313 LMFRE, new facility for, 302 Los Alamos Molten Plutonium, details

of, 336

— Materials, properties of, 269

— Materials testing, Dounreay. See Dounreay
— MERLIN, functions of, 460

Moderator and reflector, beryllium as,

 Moderator temperature coefficient, 269
 MRR, for medical use (Brookhaven), 462 Natural-circulation pressurised-water with nucleate boiling (Westinghouse), 675 Natural-uranium gas-cooled heavy-water moderated, for West Germany, 269
 NEPTUNE water-moderated, instrumentation for, 675
 Neutron flux measurement, 686

in Norway, 80

Operating experience, 237

Atomic reactor, organic-cooled, design study proposal invited by USAEC, 268

Organic liquid moderated, for ship propulsion, 793

Organic moderated and cooled, in Piqua (USAEC), 425
Organic-moderated fluid-bed (Westing-

House), 13

Organic-moderated, for ship propulsion (German), 548

Organic-moderated, for ship propulsion (Hawker Siddeley), 641; fuel element bundle for (Hawker Siddeley), 674

ORR (Oak Ridge), 462

PLUTO, closed-circuit television for, 491

Plutonium for AWRE study, 795

Plutonium for, AWRE study, 795 in Poland, 110

Pressurised-water, BR-3, for Belgium, description of, 12, 47

Pressurised-water, design study proposal invited by USAEC, 268

Pressurised-water, for East Germany, 269 Pressurised-water, for merchant ships
 (Babcock & Wilcox), 547
 Pressurised-water, radioactive deposits

build-up, 79 Pressurised-water, for Savannah, model

- Pressurised-water, for ship propulsion,

Pressurised-water, for ship propulsion (Babcock & Wilcox), 640
Pressurised-water, Shippingport, fuel

elements for, 140

Pressurised-water, for whaling factory ship, 548

- Protection circuits, 687 - RA-1 (Argentine), 12 - Reactivity control, 686

Research, classification of, 460
Research in Netherlands, 80
Research, prototype assemblies, 460
Research, radiation-source type, 460

Russia, comparisons of, 334 Safety, consolidated report on, by F. R. Farmer, 237
Safety of, control and, 687

Safety devices, 238

— Shielding. See Shielding
— for ship propulsion, choice of, 792
— for ship propulsion, firms interested in,

- for ship propulsion, hazard analysis, 674 for ship propulsion, systems proposed for, 630, 638

- for ship propulsion, systems submitted to Galbraith Committee, 792

- for ship propulsion, US projects, 545

- for ship propulsion. See also Atomic propulsion

Shut-down devices, 238 Sodium-cooled graphite-moderated,
Hallam project, 425
SPERT-III, criticality achieved, 79

SPERT-III, experiments on, 79

Steam-cooled heavy-water moderated (East Central Nuclear Group and Babcock & Wilcox Co.), 674

Steam-cooled heavy-water moderated, for ship propulsion (Vickers), 641, 793

 Sub-critical, light-water-moderated, for research and education (Miles Hivolt), 141 Superheated, design for, 267

- Superheated, design for, 207
- Superheated, at Sioux Falls, 267
- Swimming-pool, for Italian Navy, 675
- Temperature coefficient, 269
- Temperature-zoned, by F. H. Clark and

C. N. Klahr, 463

Test, USAEC meeting on, 460

Thermal breeder power, 315

Thermal output measurement, 686 Thermal, plutonium breeding in, 334 Thermal ratings of British, 367

Transient Reactor Test Facility (TREAT), criticality achieved, 366

TRIGA, for training and research, 461

URANIE light-water moderated, 461.

See also 141 — US, 78

US new concepts, 13 Water-cooled, BR.2 (Belgium), 12, 46 Water cooled and moderated, safety of,

237 Water decomposition in, 238 of West Germany, 13

Westinghouse Electric Corp. new design concepts, 13

— WTR, progress on, 461 — ZENITH (HTZER) at Winfrith Heath, data on, 239

— Zerlina (India), 80

— Research at AWRE, 768

— Centre at Berkeley, CEGB, 367

in Pakistan, 110

Spin, electrical uses of, by G. Phillips, 743
Terminology, by L. Lettenmeyer (book), 650
Time standard, Dr. L. Essen's work on, 397

- Weapons Research Establishment (Aldermaston), automatic monitor for end point recording, 102; thermonuclear experi-ments on injection of pre-accelerated particles into magnetic fields with mirror geometry, 366; pressureless sintered beryllium, 412; fast pinch device, 703; plasma heating and confining 703; Maggi, capacitor bank (million ampere generator), capacitor bank (million ampere generator), 703; atomic research at, 768; nuclear physics research division 768; particle accelerators operated by, 768; tandem generator, 769, 771; Sir W. Penney's work at, 765; Dr. N. Levin's work at, 765; Cockcroft Walton type machine as neutron source, 770; neutron spectrometry, 770; charged particle analysis, 770; liquid scintillation counter as neutron detector, 771; beryllium and plutonium

detector, 771; beryllium and plutonium for fission reactor study, 795; nuclear explosions for earth moving, 795 Atomics International, Hallam atomic power

Attache, scientific, Moscow, D. A. Senior appointed, 489, 493

Attenuation formula for marine reactor shielding, 545

Auckland Harbour Bridge, opening of, 739
Audio equipment, high fidelity, BBC programme on, 96
Frequency oscillator (trade publication), 618

Manufacturing (AIMO), 786

Aurora, radar station for study of, at Hillhead, nr. Fraserburgh, 363
Austin A55 motor car, 104
Austin, H., obituary, 228
Austin. See also British Motor Corp., Ltd.
Australia, atomic power prospects in, 463
— Economic recovery hope, 251
— Electrical engineering industry in, 273
— Import policy of 251

Import policy of, 251

Power developments in Victoria, 707
Racial questions in, 142
Shipbuilding industry in, 208
Tait's electrical directory of 1958-59

(review), 649

Trade policy review, 251
with South East Asia, increase in, 322
Vickers Ltd.'s activities in, 208 Australian Academy of Science, concrete

Atomic Energy Commission, Atomic Energy, quarterly journal of, 463; 6th annual report, 492 dome for, 776

report, 492

Citizenship Convention, discussion on racial questions, 142

Commonwealth Scientific and Industrial Research Organisation, equipment at Radiophysics Laboratory (Sydney), 121

Finance and Commerce Newsletter, comment on Australian trade prospects, 322

Institute of Nuclear Science and Engineering, activities of, 463

Authors, notes for, Institute of Physics, 801

Authors, notes for, Institute of Physics, 801
Auto-Klean Strainers, Ltd., marine filters
(trade publication), 443
Autobars Co., Ltd., automatic drink-dispensing
machines, 325
Autolaye for quartz crystal production, 219

Autoclave for quartz crystal production, 219

Autocrave for quartz crystal production, 219
Autocorrelation function and power spectrum of nonstationary shot noise, by L. P. Hyvarinen (book), 586
Automat Machine Sales, Ltd., cigarette machines, 266; self-filling "ever open shop" vending machine, 266; pushbutton type micro-resonance vibrator for relief of tension, 453; vending machines

relief of tension, 453; vending machines for hot meals and drinks, 453
Automatic Canteen Co., Ltd., "Canteen" automatic tea service, 325
Automatic control. See Control and Automatic

Landing. See Landing
 Automatic Welding, translation of Russian journal by BWRA, 501

Automation (trade publication), 586

— Bibliography, 475

- Computation and control handbook, Vol. I, by E. M. Grabbe, S. Ramo, and D. E. Wooldridge (review), 713
- Discussion in Parliament on, 272
- Effects of, discussion in Parliament on, 330

Human control in, 365 Impact on business and labour, by J. Diebold (report), 796

in production engineering, by J. A. Oates (review), 253

Research in, Government promotion of, 234

Research in, Government promotion of, 234
 in rubber tyre manufacture, 352
 Terms, glossary of, 475
 in textile industry, 77
 See also Control, automatic; International Instruments, Electronics and Automation Exhibition; National Control
 Automobile. See Motor cars
 Automobile Association, ten years of road radio services, 297; Foreign Touring Guide, 368: Ford Escort breakdown vehicles

Automobile Plastics Co. Ltd. repair of glass-

Automobile Plastics Co., Ltd., repair of glass-

reinforced plastics coachwork, 448 — Workers, United. See *United*Automotive inventions of Ettore Bugatti, by

H. G. Conway, 200, 207 Autopark (trade publication), 185

Autophoto Co., automatic photographing machine, 325
Autoplot automatic electronically-controlled tool positioning machine (Mullard), 5

Autoram electromechanical thrust units (George Angus & Co.), 665 Auto-transformer control of induction motor,

Aveling-Barford, Ltd., scholarship in highway engineering, 105; sales in Latin America, 812

Avery, W. & T., Ltd., spring testing machine, 486; electrodynamic balancing machine, W. & T., Ltd., spring testing machine,

Aviation, British, aeroplane directory of, 1959 (review), 649 Medicine, Royal Air Force Institute of.

See Royal Air Force - Techniques, managing, by C. J. McCarthy, Avica Equipment, Ltd., Seawings hydrofoils,

87; swivel pipe couplings for hydraulic systems, 621. See *Correction*, 720

Avo, Ltd., acquisition of, by Metal Industries, Ltd., 296; low-power scaling unit, 318; electrical testing (trade publication), 802

Avro 748 turbo-prop airliner project, 103 Avro Arrow supersonic fighter, Canadian Government discontinues work on, 290

Supersonic interceptor aircraft. development of Iroquois turbojet engine for (Orenda), 26 Avtomaticheskaya Svarka (Automatic Welding),

Russian journal, translation by BWRA, 160 AW650 aircraft. See Argosy
Axial elasticity, Newtonian theory of, by
A. N. Procter, 798
Axle cases for Toronto underground trains, 786

Ayer, Frederick B., and Associates, purchase of surplus aircraft from American AirAzoflex document-copying machine (Ilford),

### B

BABANI, B. B., international radio tube encyclopaedia, 1958-59, 310

encyclopaedia, 1958-59, 310
Babbitless Co. (Great Britain), Ltd., gyratory crushers, 728
Babcock & Wilcox, Ltd., association with ACC of India and Vickers, Ltd., 231; activities in Commonwealth, 402; history and activities of, 402; subsidiaries of, 402; competitors of, 402; atomic energy activities, 403; licensees, 403; range of boilers manufactured by, 403; atomic propulsion work, 490; research activities and policy, 521; PWR reactor project for merchant ships, 547; nuclear ship propulsion development, 547; model of gas-cooled graphite-moderated reactor in tanker, 547; pressurised-water reactor for ship propulsion, 640; annual report, 668

ship propulsion, 640; annual report, 668
Babcock & Wilcox Co. (US), liquid metal fuel reactor facility for design information for LMFRE, 302; steam-cooled heavy-water moderated reactor, 674. See also Savannah merchant ship

BAETA for plutonium removal from living organisms, 302
Bailey, Sir W. H., & Co., Ltd., "Bi-Seat" control stop valve for steam lines, 621

Bakelite, Ltd., polyester dough moulding material, 160; Vybak Industrial rigid pvc sheet for Hydrotron vapour blasting equipment, 284; electrical potting resin, 309; polyester resin, reinforced, for van body, 557; plastics review (trade publication), 746

lication), 746
Baker (monkey in rocket), 726, 727
Baker, A. J. S., on miniature oil velocity indicator, 82
Baker, C., Instruments, Ltd., Sterimag stereoscopic magnifier, 730
Baker, G., parking (review), 777
Baker, Prof. J. F., impact machine for Naval Construction Research Establishment, 800
Baker Perkins, Ltd., Taccone diaphragm moulding machine, 722
Balance, of payments, Ltk., 1956, to 1958

Balance of payments, UK, 1956 to 1958, White Paper, 531 — Rooms, by A. Stucky (book), 618 Spring, Mancur, by J. F. Perrin, 355. See Letters, 419, 531
 Balancing, dynamic, with gas film bearings, 179

- of grinding spindle with gas bearings, 678 Machine, Electrodynamic (W. & T. Avery), 632

with pressurised air bearing, 179 Balency and Schuhl, Paris exhibition hall, 738 Ball bearings. See Bearings - Seal (Burtonwood Engineering Co., Ltd.) 294

Bushings for precision linear motion (Ransome & Marles), 471 Mill for beryllium powder production, 413

Ballasts for gas-discharge lamps, life of, by T. Hehenkamp, 32

— Tray, Glitsch (Metal Propellers, Ltd.), 665
Ballentyne, D. W. G., dictionary of named effects and laws (review), 311

Banbury mixers, electronically-controlled, in rubber manufacture, 352
Band conveyors. See Conveyors
— Strapping, HSD tensioner for (Packers Supply Co., Ltd.), 293
Bandamatic spirit duplicator (Block & Anderson Controlled)

Bandamatic spirit duplicator (Block & Anderson), 698 Bandavelop photocopying machine (Block &

Anderson), 698 Banks, annual reviews of, 135

— European Investment. See European

— International. See International Bank of Reconstruction and Development

World. See International Bank of Reconstruction and Development
 Banking industry's annual reviews, 135
 Bantu, development of, 397

Bars, bored (trade publication), 746 Shearing machine, Beton (Thos. W. Ward),

- Steel, bending machine for (Chamberlain Industries), 761

Barash, Dr. M. M., on controlled shot peening, 222 Barbados suction cutter dredger, Heenan Dynamatic coupling for blade protection

of, 114
Barber-Colman Co., multi-switch indicator for checking temperatures, 455
Barclay, Andrew, Sons & Co., Ltd., diesel-

hydraulic locomotive with Twin Disc torque converter, 51
Barford, Dr. N. C., on hydrogen bubble chambers, 367 Barium titanate transducer for ultrasonic

flaw detector, 570 Barking flyover, completion of, 670 Barlow-Whitney, Ltd., Hyvacoilfil high vacuum drying and impregnation plant, 416;

gas-fired forced-convection trolley-loading gas-fred forced-convection trolley-loading ovens, 422; gas-fired tray-loading industrial ovens, 664

Barnes, D. E., on radiation hazards and protection (review), 377

Barnes Milling, Ltd., new flour-mill layout at, 156

Barr & Stroud, Ltd., automatic scanner for

nuclear research emulsions, 102 Barrage, Taunsa, Pakistan, opening of, 473
Barrels, lifting tongs for close stacking of
(Walter Somers), 808

Barrett, T. R., on pressureless sintered beryllium: Part 1—production techniques, 412;
Part 2—evaluation of new process, 437
Barrier, traffic, electrically operated (Bolton Gate), 263

Barron, D. A., on subscriber trunk dialling, 160 Barron, W. S., & Son, Ltd., Sureseal filling valve (trade publication), 443

Bartlett, R. L., steam turbine performance and economics (review), 745

Base, G. D., transmission length in pre-

tensioned concrete (book), 93

Basildon monorail prototype, 387
Basrah Petroleum Co., Ltd., deep-water berth
for supertankers in Persian Gulf, 231;
deep-water oil terminal at Shatt al Arab,

Bass John, Ltd., equipment for ultra clean production, 415

Bassaire clean rooms for ultra-clean production, 415

Personal decontaminator, 415 Pressurised assembly cabinets, 415

Bastow, F., on specifications for rubber products, 476 Bates, Col. D. H., on replacement of Queen

liners, 636
Battelle Memorial Institute, research on cobalt oxides for catalytic combustion of exhaust gases, 684

Battersea College of Technology, fog dispersal experiments, 428 Battery for agricultural industry, plea for standard, 458

Lightweight, for motor car, TEL, 393. See Correction, 496 Tape recorder, miniature (Fi-Cord, Ltd.) 454

- Vehicles. See Motor car; Motor vehicle; Tractor; Truck
Wrist watch, Lip, 256

— See also *Cell*Baumeister, T., mechanical engineers' handbook (book), 746

Bayha, F. H., engineered work measurement (review), 282
Bayman, Dr. B., on collective motions of nucleus, 466
BBC. See British Broadcasting Corp.
Reacon satellite summary of details of 616

Beacon satellite, summary of details of, 616
Beale, Sir S. R., on Worthington-Simpson's trading profits, 796
Beams, floor, section determination by Pegasus computer, 18

Prestressed concrete, for Heinz factory at

Kitt Green, 578

— and slabs design, tables for, by J. S.
Cohen (book), 184

— Timber, Aerolite glued, Cawood Wharton, Bearing, air, in balancing machine, 179

— Ball, for Berkeley reactor servicing machine,

- British Standard on, 188 Effect of water in lubricant on, 403

— Roballo slewing rings, 340 wire-race, 339 - for David Brown 950 tractor, 406 Equivalents (trade publication), 554

Expansion, for bridges, Neoprene for, 543 — Gas, applications of, 181 — — (Bristol Siddeley), 490 Film, applications of, 181

Film, shaft stability in, by V. H. Brix, 178 — — Hydrodynamic, for grinding spindle, by
Dr. S. A. Sheinberg and A. M. Kharitonov, 677

— Stiffness of, 182
— in gas turbine for gasifier-turbine plant, 50

Manufacture (trade publication), 650

Manufacture (trade publication), 650
Materials, dry (Glacier Metal), 503
Miniature, production under ultra-clean conditions (BMB), 415 Needle, Nadella, for cam followers (trade publication), 554

publication), 554

— Oil-film, shaft whirl with, 180

— Parallel-roller, British Standard on, 188

— Reinforced plastics, manufacture, properties and applications (Railko, Ltd.), 27

— Roller, Max-Load (trade publication), 554

— Nadella, for cam followers (trade publication), 554

— Wire race, 329

Wire-race, 339

 Wire-race, 339
 Water-lubricated, turbo-pump unit with (G. & J. Weir), 487
 Bechtel Corp., Hallam atomic power plant, 425
 Bedford diesel industrial units, glass fibre castings for (W. & J. Tod, Ltd.), 505
 Beldam Asbestos Co., Ltd., Lascarflon packings and jointings in asbestos and ptfe, 503; activities and new factory of, 604 Belgian Congo, Pye instrument landing system

for Elisabethville and Leopoldville air-

ports, 604 Belgium, atomic energy consortia in, 12

Energy programme, 12 Reactor BR2, 46
Reactor BR-3, 47
Coalminers' strike, 355

- Glass industry, position and prospects of, - Speed limits in ,644

Bell Aircraft Co., control rocket engines for X-15 upper atmosphere research aircraft, 361

Bell, L. R. H., overseas tour of, 177 Bell Telephone Laboratories, five-advance twistor shift register, 53; thermocom-pression bonding of metallic leads and semiconductors, 55; hydrothermal process for quartz crystal production, 219; "compatibility" circuit for single channel stereophonic reception, 384; retirement of Dr. M. J. Kelly, 549; field effect tetrode, 680; low melting point glasses for electronic components, 747; transistorised artificial larynx, 788

Bell, W. D., management guide to computers (review), 122

Bellows, applications of, by Teddington Aircraft Controls, Ltd., 39

Joints (trade publication), 554

Belmos Co., Ltd., flameproof lighting transformer to NCB specifications, 357; SBU-1 hand-operated flameproof circuit breaker, 665

Belt conveyor, See Conveyor Belt conveyor. See Conveyor

Safety, for motor cars, 297, 324 Timing, Powergrip, for One-20 diesel dumper, 589 Belting, conveyor, Terylene-rubber, for Russian ore field (BTR Industries), 284

Transmission, nylon Roko, 504 - Tup, Roko nylon, for drop stamp, 504 Bench, fettling, with built-in dust extraction equipment (Newton Collins), 722 Bending aluminium (booklet) (ADA), 210

Machine for plate, vertical (Hugh Smith (Possil)), 570
— Staffa, for steel bars (Chamberlain Industries), 761

Industries), 761

— Pipe (trade publication), 474

— Plate, Besco rollers for (F. J. Edwards), 454

— Tube, angle of, calculator for (Chamberlain Industries, Ltd.), 324

Benesovsky, F., on silicides and borides, 90

Benge, R. C., technical and vocational education in UK (bibliographical survey), 61

Benjamin Electric, Ltd., Taskmaster range of Flurolier fluorescent lamp fittings, 198

Benjamin Franklin medal awarded to H. G. Benjamin Franklin medal awarded to H. G.

Nelson, 142
Bennett, F. S., obituary, 2
Bennett, J. D., design of eccentrically-loaded columns by load-factor method (book), 184 Bentall-Alley, Ltd., Easy-Roll roll-up ladders, 628

Benton & Stons, Ltd., air control (trade publication), 93; packing, stocking and despatching system in new warehouse, 721
Berk, E. W., & Co., Ltd., bentonite and zircon sand, 722

Berkeley atomic power station, progress of, 206; gas circulator for, 269. See Correction, 395; research laboratories at, 367; ball bearings for reactor servicing machine, 484; fuel loading-unloading machine, 490

Berkeley sports car, 329

Berliet. See Automobiles M. Berliet

Berlin, West, radio link with German Federal Republic, by tropospheric scattering, 711 Berridge, P. S. A., on Brunel's contribution to bridge engineering, 538
Berry, Henry, horizontal press for wheel rim rolling (David Brown), 785

Berth, deep-water, for supertankers, in Persian Gulf, 231

Beryldur beryllium-copper alloy, 588 Beryllium in atomic energy, 412

Atomic fuel cans, development of, 239 as atomic reactor moderator and reflector,

- Canning for atomic reactor, 139

Copper alloy, Beryldur, 588
Crystal structure of, 412
for fission reactor study, AWRE, 795
Handling precautions, 412
Irradiation tests on, 139

Magnesium alloy for atomic fuel elements, Powder techniques, 412

Pressureless sintered, production techniques, by T. R. Barrett, 412

- Sintered, properties and fabrication, by T. R. Barrett, 437

Production methods, 412 Rocket fuel, 279

Rockettud, 219
Beryllium Smelting Corp., Beryldur beryllium-copper alloy, 588
Toxicity of, 412
Types of, 412
Types of, 412

- Types of, 412

- Tube, extrusion of (Chesterfield Tube), 491

Besco plate bending rollers (F. J. Edwards), 454

- Pneumatic slide feed for power presses
(F. J. Edwards, Ltd.), 295

Besco-Truebend press brakes (F. J. Edwards),
808

Besco-Truecut metal guillotines (F. J. Edwards, Ltd.), 730

Beta ray emitting radioactive isotopes, 497

Betatron, East Germany, 772
Bethlehem Steel Corp., resin-bonded adhesive for rigid joints in long rails, 32

Bethnal Green rail-over-road bridge replace-ment, 408

Beton-Kalender 1958. Vols. I and II (review),

Beton portable bar shearing machine (Thos. W. Ward), 293
Bevans Works (Swanscombe), discussion in Parliament on electrostatic precipitators at, 298

Beverages, refrigerated, vending machines for (Coca-Cola Export Corp.), 453
Bevinda plastics-hulled motor yacht, 87

Beyer-Garratt steam locomotives on Rhodesia Railways, 52 Beyer Peacock & Co., Ltd., Beyer-Garratt steam locomotives for Rhodesia Rail-

ways, 52 Bhabha, Dr. H. J., on atomic power station for

India, 269 Bhattacharyya, H. P., on tyre and road adhesion, 631

Bi-Seat control stop valve for steam lines (Sir W. H. Bailey & Co.), 621 Bibliography, automation, 475 — Crushing and grinding (book), 376 — Heat (1955-56), 123

- Shell moulding, 343

Technical writing, 553
BICEP atomic reactor, special rods for, 239
Bicycles, handbook of collection at Science
Museum, Part II, by C. F. Caunter
(book), 29

Industry, position and prospects of, 147
 Manufacture in Ireland, Tube Investments-Raleigh, 595
 Motorised, position and prospects of, 147

Big Ben centenary stamp, 298 Bildworterbuch, Dudden, Der grosse, 343

Bindworterbuch, Dudden, Der grosse, 343
Bins and trays, plastics (trade publication), 474
Binary alloys, constitution of, by M. Hansen
and K. Anderko (review), 154
Binding cases for Engineering, 122
Binks hose coupling for fluid lines (Alfred
Bullows & Sons), 728

Biochemical oxygen demand, 679 Biochemistry, general, by J. S. Fruton and S. Simmonds (review), 411 Biological effects of radiation, 236

Research, electronic apparatus for, by
 P. E. K. Donaldson, 475
 Birfield Industries, Ltd., university scholarship

awards, 701 Birkett, Samuel, Ltd., pressure reducing valves, 761

Birlec-Efco (Melting), Ltd., electric furnaces,

Birlec, Ltd., high-frequency furnaces for stainless steel production, 58; electric furnace equipment for annealing pearlitic malleable iron castings at Ley's Malleable Casting Co., Ltd., 245; new works at Aldridge for heat treatment under contract, 478; hump-back furnaces for annealing, and brazing, 484; mesh-belt annealing and brazing, 484; mesh-belt conveyor furnaces with continuous internal gas-tight muffles, 556; heat treatment

atmosphere generator, 556
Birmingham Chamber of Commerce, trades directory, 1959, 310

— College of Technology, course for technical representatives, 126

Engineering Centre, expansion of activities, 251; at British Trade Fair, Lisbon, 369 Lanterns for inner ring road, 215 Museum of Science and Industry, old steam

engines at, 380; engineering hall extension,

— Stainless steel plant for (Spartan Steel & Alloys, Ltd.), 58
— University, scholarship in highway engineering, 105; development of Highway Engineering School, 573, 579; cyclotron conversion, 772
— See also London-Birmingham Motorway

Birwelco Ltd. contract for all-radiant air

Birwelco, Ltd., contract for all-radiant air heater for National Gas Turbine Estab-lishment, 423

Bischoff tower purifiers for desulphurisation in Lurgi gasincation, 588 Bismuth, liquid, mass transfer in, 317

— Molten, for atomic reactors, 302 Bison precast concrete (trade publication), 185 Bituminous Coal Research Inc., coal-fired gas turbine, 441

Paint, Blackpete (trade publication), 650 Road surfacings, skidding of, polishing of roadstone in relation to resistance to, by D. J. Maclean and F. A. Shergold (book),

Black & Decker, Ltd., U.10 electric jigsaw, 224 Black, E., on subsidising in underdeveloped countries, 530

Black Knight rocket, second test firing, 362 Black, Sir W., remarks on activities of NRDC,

Blackburn, R. G., sheet metal work, Part II (book), 475
Blacker, Lt.-Col. L. V. S., on flashless and recoilless gun, 186
Blackman, Keith, Ltd., T1100 dust collector,

569; hydro-precipitator for extracting fine dusts, 570

Blackman, R. V. B., Jane's Fighting Ships, 1958-59 (review), 474 Blackpete bituminous paint (trade publication),

Blackwall Tunnel, new North Approach and road improvements to, 803 Blades, cutter dredger, protection by Heenan

Dynamatic coupling, 114

Turbine, frequency of, effect of disc elasticity, by J. P. Ellington and Dr. H. McCallion, 645. See Correction, 800

— for Iroquois turbojet aircraft engine

(Orenda), 26

Vibration test rig, dynamically isolated, by Dr. W. Carnegie, 54
 Blagdon-Durham, Ltd., air-driven submersible sump pumps, 455
 Blake Lobe methoding of som type pump. 528

Blake, John, marketing of ram-type pump, 528
Blakeborough, J., & Sons, Ltd., motoroperated steel butterfly valve for atomic
reactor gas duct, 490

Blankets, atomic reactor, breeding, fertile media for, 315

Reactor, processing for, 315
 Reactor, "thermalised," for fast breeder reactor, 317

Feactor, 317

Blast furnace. See Furnace

— Gas. See Gas

Blasting, shot. See Shot blasting

— Vapour, Hydrotron equipment (Metachemical Processes, Ltd.), 284

Blaw Knox Co. Ltd., self-progressed bushet

Blaw Knox Co., Ltd., self-energised bucket (trade publication), 155; annual report for employees, 669

Blee, D., on improvements in rail traffic, 163
Blending Machine Co., Ltd., flameproof
rotary vibrators, 420; vibrators for
hoppers and bunkers, 447 Bleuet campers cooking stove, 224
Blick Time Recorders, Ltd., time recorder for

components, 324

Blo-flex automatic moulding machine (J. W. Jackson & Co.), 722 Blo-shooter machine for blowing or shooting cores or moulds (Pneulec), 722
Block & Anderson, Ltd., Bandamatic spirit duplicator, 698; Bandavelop photocopying

duplicator, 698; Bandavelop photocopying machine, 698

— Concrete inertia, for air compressor foundations, 214-215

Bloodhound missile for RAF, 604

Blough, R. M., on US Steel Corp., 423

Blount, P. Clavell, on suggestion schemes, 164.

See Letters, 195

Blowers, oil free (William Allday & Co.), 760

— Turbo, See Turbo

Turbo. See Turbo
Blue Book on Free Trade Area negotiations,

Hawk tiles for CIBA (ARL), Ltd., new building, 707
 Streak rocket for satellite, discussion in

Parliament on, 571

— Zone parking system, 195 Bluff Harbour extensions, New Zealand, 671 BN-50 atomic reactor, Russian, comparison of, 334 BN-250 atomic reactor, Russian, comparison

of, 334

Board, elbow, for reducing fatigue at British
Typewriters, Ltd., 319
— of Trade, letter on Distribution of Industry (Industrial Finance) Act (1958), 130; delegation to Russia, 571. See also Export Credits Guarantee Department

Boat building, "do-it-yourself," 87

— Glass-fibre construction for, 86

— Motor. See Motor Boat

Boat Show, National. See National
— Submarine. See Submarine
— See also Dinghy; Yacht Bobbins, nylon coil, for miniature transformers (George Goodman, Ltd.), 653
BOC Metallurgical Powder Dispenser for

desulphurisation and recarburisation of cast iron, 748

Bochumer Verein für Gusstahlfabrikation,

acquisition of majority shares by Hütten-und-Bergwerke Rheinhausen, 264 BOD. See Biochemical oxygen demand

Bodies, slender cambered, subsonic drag and pitching moment characteristics of, by K. D. Harris (book), 778

— See also Motor car; Motor vehicle

Boeing Airplane Co., hypersonic wind tunnel with 18,000 m.p.h. airflow, 219; development centre at Seattle, 488

Boeing Romare missile bases for 700

Boeing Bomarc missile, bases for, 700

Boeing 707 Intercontinental jet airliner, 456; for BOAC, 434; fail-safe tests on, 623 Boggs, H., Foreign Investment Incentive Tax

Bill, 724
Bogod, M., on productivity in food industry, 690
Bohr, N., atomic physics and human know-ledge (review), 155

Boilers (trade publication), 502

Air-Lok Damper for (Combustion Equipment), 601 Availability Committee, improved methods of analysis of coal ash, slag and boiler deposits, by K. Archer et al., 64

Babcock & Wilcox, Ltd., 402, 403

— Deposits, analysis of, by K. Archer et al., 64 Exports, 402

Feed regulator (trade publication), 443

- water. See *Water*Furnaces, dust and grit emission, measurement of (BCURA), 613 See also Stoker Hot-water, radiant-heat, coal or oil fired (Fraser), 570

House plant exports, 402

- House plant exports, 402
- Integral furnace (Babcock & Wilcox), 403
- Locomotive, reflex gauge glasses on, 31
- — See also Locomotive
- Making, Babcock & Wilcox, Ltd., 402, 403
- Marine, refractories research, 619
- Monolithic linings for, 619
- Oil-fired, domestic, Oil-Crat, 596
- — Fired domestic, Silver Flame (Kimber & Lovegrove), 96

Lovegrove), 96

 Firing unit for, MacFire. printed circuit for control system of (Urquharts), 592
 Plant, industrial high-pressure, treatment of water for, by J. Arthurs, J. A. Robins and T. B. Whitefoot, 247

Powermaster packaged (GWB Furnaces), Radiant-heat hot-water, coal or oil fired (Fraser), 570

Reflex gauge glasses, longer life for, by W. R. Hoes, 31 Refractories, by W. McClimont, H. M. Richardson and B. Taylor, 619
Room accident in frigate, 605

- Selectable Superheat (Babcock & Wilcox), 403

Steel, metal-arc welded, rules for con-struction testing of scantlings of (book), 746 Single-pass header (Babcock & Wilcox), 403

Three-pass packaged, steampacket (Cradley Boiler Co., Ltd.), 295

— Pass header (Babcock & Wilcox), 403

Yertical (trade publication), 377
 — (Cocheran & Co.), 760
 — Water. See Water
 — Level indicator, closed-circuit television system (Hopkinsons), 166
 Boissiron, Paris exhibition hall, 738

Boll, C. R., on Cummins diesel engines for Canada, 435

Bollinger, Dr. L. L., STOL aircraft, 264

Bolts, cylinder head, tests on, 304

— Driver, Bosch (Trend Industrial Equipment), 762

Long Diesel engine freeture of 106 Long, Diesel engine, fracture of, 96

Nut, Screw and Rivet Federation, British. See British Bolton Gate Co., Ltd., electrically operated traffic barrier, 263 Bolton, Matthew, work with James Watt, 520

Bolton, W. F., Railwayman's diesel manual (book), 311

Bomarc missile, Boeing, bases for, 700

Bond Minicar, Mark F, threewheeler, 45

Bondarc resin-based adhesive for rigid joints in long rails, 32

Rending in ceremics, by D. A. Robins, 90

Bonding in ceramics, by D. A. Robins, 90
— in ceramic-metals, 91
— Redux, for Argosy aircraft, 75

Reddy, 161 Algosy afferalt, 73
 Thermocompression, of metallic leads and semiconductors (Bell Telephone), 55
 Bonnell, Dr. J. A. L., appointed nuclear medical officer to CEGB, 302
 Bonnington, J. S., review of Parking, 777
 Bonus scheme for Austin motor workers, 537
 in building industry, 73

in building industry, 73
Book exports, discussion in Parliament on, 458
Sales overseas, discussion in Parliament on,

Scientific, of 18th century, and emergence of modern science, by H. D. Anthony, 713

Trade overseas, discussion in Parliament on, 458 Boome, Col. K. E., heavy-duty roads for

Africa, 671
Booth, A. D., on mechanical resolution of linguistic problems (review), 184
Booth, James, & Co., Ltd., light-alloy sections for Manchester bus shelter, 94
Boots the Chemists, price reductions by, 251

Borax-4 atomic reactor, 426
Borax-5 reactor for superheater testing, 267
Bore casing in Wairakei geothermal power project, 400 Discharging in Wairakei geothermal power project, 400

Bored bars (trade publication), 746 Boreholes. See Wells Borgward Group, activities of, 297 Borides, developments in, by R. Kieffer and

Borides, developments in, by R. Kieffer and F. Benesovsky, 90
Boring and drilling machine, Co-Ordinate (Grimston Electric Tools, Ltd.), 532

Machine, jig, Master Bar (Buswell & Sweeney), 5

— Jig, No. 3 (Catmur Machine Tool Corp.), 600

— for restricted positions (Buma Engine

-for restricted positions (Buma Engineering), 600 Transportable, Swiss "Rigid," 562

— Iransportable, Swiss Rigid, 562
 — Universal horizontal, with BTH coordinate setting system (Kearns), 562
 — Vertical, equipped with outriggers (George Richards), 723
 — Tool holders, Eclipse, for English pattern lathes (James Neill & Co.), 696
 Boron rocket fuel, 279
 — Steel balls for earthquake safety of Japanese atomic power station 463

atomic power station, 463

— 10 isotopes, separation of, 204 Boronhydride rocket fuel, 279

Bosch Arma Corp., Arma Brown gyroscopic compass, 749

Bosch bolt driver (Trend Industrial Equipment), 762

Bossoms Boatyard, Alpha class sailing dinghy,

Botanic Garden, Royal, Edinburgh. See Royal Botanic
Botterill, J. S. M., review of Atomic physics

and human knowledge, 155; review of Principles of modern physics, 502

Bouellat Engineering, Ltd., boilers (trade publication), 502 Boundary layer control for Hercules C-130 troop carrier aircraft (Lockheed Aircraft

Corp.), 505
Bourner, F. H., & Co. (Engineers), Ltd., cartridge-operated fixing tool, 327 Bowater-Eburite Fibre Containers, Li packing paper (trade publication), 283

Bowater Organisation, ceiling panels, 192

Bowater Organisation, ceiling panels, 192
Bowater-Scott Corp., paper towels, 453
Bowden, F. P., friction and lubrication of solids (book), 746
Bower, J. L., design of servomechanisms (review), 713
Bowers, E. H., on hydrostatic drives, 654
Bowes and Bowes, directory of opportunities for qualified men 1959, 29
Bowes Committee on canals 290

Bowes Committee on canals, 290
Bowker, H. W., on operating costs of nuclear-powered ships, 676
Bowl, music, at Melbourne, with plywood and aluminium canopy, 610

Bowman, Sir J., remarks on position and prospects of National Coal Board, 66
Bowser, Monks & Whitehouse, Ltd., Don Brake Meter for motor vehicle testing, 612
Bowyer, E. C., plea for clarification of Government and aircraft industry relationship 2

ship, 2 Boyd, G. M., on jargon, 259 Boyd-Carpenter, J., on processes for com-

bating pneumoconiosis, 330

Boydell, E., & Co., Ltd., Muir-Hill 10B dumper, 454

BP Trading, Ltd., order statistics, 369; self-service pumps, 369 BR-1 atomic reactor (Belgium), 12

BR-2 atomic reactor (Belgium), 12; description

BR-3 atomic reactor (Belgium), 12; description of. 47 Brackets, roller, for advancing girder supports,

623 Bradford, redevelopment of city centre, 190
Bradley & Craven, Ltd., automatic car loader
for cutting, palletising, and loading
bricks, 454

Bradley & Foster, Ltd., refined irons, 722
Bradshaw-Jones, M. H., on suggestion schemes, 99–100, 163–164. See LETTER, 131

Bradwell atomic power station, auxiliary transformers ordered for, 491; heat exchangers for, 525
Brady, G., & Co., Ltd., sliding doors (trade publication), 377
Brain surgery by proton beam, 202

Brain surgery by proton beam, 302 Brainstorming, 457 Brakes, disc, cinema film on (Dunlop Rubber Co.), 368 Electromagnetic (Newman Industries),

455 - for hydraulic or mechanical operation

Tor hydraunic or mechanical operation (Twiflex Couplings), 533
 Drum temperatures in racing cars, by T. P. Newcomb, 709
 Electromechanical (trade publication), 474
 Meter, Don Brake Meter, for motor vehicle testing, 612
 Motor or, weeking party on 544

Motor car, working party on, 544
Press, Besco-Truebend (F. J. Edwards), 808
Tester, home made, by H. Clausen, 663 Trailer, working party on, 544See also Dynamometer

See also Dynamometer
Braking, dynamic, of induction motors, a.c., by Dr. O. I. Butler and Dr. V. Ahmad, 590
Regenerative, cargo winch with (Clarke, Chapman), 484
Bramigk & Co., Ltd., tea-making automatic vending machines, 325
Brand, Charles, & Son, Ltd., Potters Bar railway tunnels, 707
Brandhurst & Co., kryston, 85 as light source.

Brandhurst & Co., krypton 85 as light source,

Brandwood, L., on mechanical resolution of linguistic problems (review), 184 Brass, aluminium, for tank heating coils, 250
— Strip for triangular spindle (Plessey), 622
Braun, B., on wire-race anti-friction bearings,
339

Brave Borderer patrol boat with gas-turbine engines, 52

Brazil, atomic energy programme, 12
— Cement plant (COMINCI), 57

Hydroelectric power project, 57 — Investment prospects, 354
Brazing and annealing furnaces, Hump-back

(Birlec), 484

Rods for Sifbronze process (Suffolk Iron Foundry (1920)), 503

Service, Newton Victor, 264 Breakdowns. See Accidents

Breathing apparatus (trade publication), 216

Brecknell, Dolman & Rogers, Ltd., cigarette machines, 266; Vendol "automatic shop," 266
Breddy, N. C., turbine design for aircraft engines (book), 746
Brennan, John, Radio Corp. of America licence to, 264; formation and activities of, 264

of. 264

Breswood laminated plywood sheets, 739
Brick bankers, vibration of, 447

— Fire. See Refractory materials

— Handling, packed system, 671

Loader, for automatic cutting, palletising and loading (Bradley & Craven), 454
 Perforated (BRS), 495

Tests on, and use of, work of Building Research Station on, 63

Brickwork. See also Refractory materials
Bridge, Auckland Harbour, opening of, 739

— Chepstow, over River Wye, 538

— Clifton Suspension, 538

- Cinton Suspension, 538
- Concrete, on Danish railways, durability and maintenance of, by A. Jeppesen, 384
- Concrete slab, for abnormal loading, design of right, by R. E. Rowe (book), 253
- Construction, cast iron in, 538
- Wrought iron in, 538

- Early, 10 - for East India Dock Road over Blackwall

Tunnel North Approach, 803

Engineering, Brunel's contribution to, by P. S. A. Berridge, 538

Expansion bearing of Neoprene, 543

Hull, opposition withdrawn, 642

Humber, opposition withdrawn, 642
Hungerford Suspension, over River Thames,

- Personnel, at Heinz factory at Kitt Green, Queensbrough, across Fraser River, con-

tract to John Laing & Son (Canada), Ltd., 391 - Rail-over-road, replacement at Bethnal

Green, 408 Loyal Albert, Saltash, centenary of, 538-540

- Runcorn-Widnes, new north approach to,

Steel and concrete for, composite construction in, by I. M. Viest, R. S. Fountain and R. C. Singleton (book), 29
— Girder, British Standard (revised), 280
— Suspension, modern large-span, by O. A. Kerensky, 190
— over Tagus at Lisbon, competition for, 643
— Tamar, construction of, 171
— Thames, Maidenhead, 540
— Windson, over River Thames, 538

Windsor, over River Thames, 538 Wye, Chepstow, 538

 See also Viaduct
 Bridges, S. N., motorised hand drill, 288;
 Nu-Gear gearbox attachment for hand drill, 288 Bridgman, L., Jane's All the World's Aircraft,

1958-59 (review), 474

Wing Cmdr. R. A. C., on London heliport, 542

Brightside Heating & Engineering Co., Ltd., dual-duct high-velocity air conditioning system at, 158 Brimar, Ltd., PCC89 television tuner amplifier valve, 583

Brindisi, petrochemical plant project by
Montecatini Chemical Co., 509

Brine, W. I., & Sons, prefabricated timber drying shed, 739
Brinsworth Mill, medium width steel strip production at, 22

Bristol Aero-Engines, Ltd., marine Proteus turbines for patrol boat Brave Borderer, 52; merger with Armstrong Siddeley Motors, Ltd., 231; overhaul life of Proteus 705 propeller turbine engine extended, 403

Bristol Aircraft, Ltd., Operations Development department for Britannia airliner, 787; Operations Development investigation for Canadian Pacific Airlines, 787

Bristol-Ferranti Bloodhound missile for RAF,

Bristol-Siddeley Engines, Ltd., jet engines for OR 339 strike aircraft project, 41; organisation pattern for, 231; brief details of Orpheus B Or 12 turbojet aircraft engine, 374; Maybach diesel engines, 484; gas bearings, 490; 3 MW gas turbine alternator, 569; appointment of T. P. Frost as chief test pilot of, 573; manufacture under licence of Orpheus 803 turbojet engine by Federal German Republic, 604

— University, Symposium on Hypersonic

 University, Symposium on Hypersonic Flow, 656

Britannia airliner, Operations Development

Operations problems on department for investigating problems on (Bristol Aircraft, Ltd.), 787
Royal Naval College (Dartmouth), change

in entry regulations, 364
Britannic freighter aircraft, description of, 274

- SC-5 strategic freighter aircraft (Short Bros. & Harland), 226

British Aluminium Co., Ltd., bid for contro of, by Alcoa and Reynolds Metals, 3; bids for take-over of 39. See also Plain Words, 34; control secured by Reynolds Metals and Tube Investments, 71; appointments to beard of 329. 1; appointments to board of, 328; pull-through "welding gun for thin aluminium, 503

American Chamber of Commerce, booklet on Greer's Ferry turbine contract, 456

Association: Glasgow Meeting: Section G (Engineering): Nuclear reactor controls, by J. Walker, 686; Lubricants in the nuclear age, by Dr. C. G. Williams, 715; instrumentation in nuclear power stations, by Dr. D. Taylor, 750 by Dr. D. Taylor, 750 British Automatic Co., Ltd., vending machines,

266; automatic tea-vending service, 325 Aviation, aeroplane directory of, 1959 (review), 649

Bolt, Nut, Screw and Rivet Federation, heads and threads: buyers' guide, 1959

(review), 649
British Broadcasting Corp., "Sound" programme on high fidelity audio equipment

and tape recording, 96; Spotlight on Television (booklet), 128; handbook, 1959 (review), 310; VHF transmissions from Wenvoe, 384; Television in the Public Service (booklet), 457; pamphlet on broadcasts on seeking jobs for young people, 765
British Brown-Boveri Ltd., death of H. Oswald 68

Oswald, 68 Cast Iron Research Association, growth and

creep of iron castings, 683
British Celanese Ltd., fibres in polypropylene and polyethylene, 748

Ceramics Research Association, marine boiler refractories research, 619

British Commercial Computer Bulletin, 585

British Commercial Computer Buttetin, 385

British Computer Society, symposium on instrumentation and computation in process development and plant design, 783

— Coal Utilisation Research Association, faster analysis in steam boiler operation, 64; 21st anniversay, 613; current research activities, 613; automatic control for miniature chain-grate stoker, 613; measurement of dust and grit emission from surement of dust and grit emission from boiler furnaces, 613; sulphur release from

boiler furnaces, 613; sulphur release from house coal, 613; conversion of small coal to gas and oil, 613; experimental slagging gasifier, 613; industrial and domestic heating investigations, 613

Council, catalogue of nuclear courses, 395

Electrical and Allied Manufacturers' Association Leading the World, 48th anniversary publication, 391; remarks on electrical exports, by J. D. Knowles, 418; abbreviations of associations, institutions, research and trade associations. 501 research and trade associations, 501

— Development Association, Recommended Electrical Appliances, 628

— Power Convention (10th), 1958, proceedings of (book), 184

Electronic Component Show, exhibits at, 583 Employers' Confederation, report on employers' Confederation, report on training of young workers during "bulge" years, 207

's' Association, handbook, 1958 Engineers'

Engineers' Association, handbook, 1958 (book), 29
 Handbook, 1958 (book), 29
 British European Airways, overhaul facilities for Rolls-Royce Dart turboprop aircraft engines at London Airport, 223; air service to Moscow, 458, 700; effect of Air Union on, 764. See also 763
 British Fulmar, tanker, Sulzer diesel engine for (Alexander Stephen), 134

(Alexander Stephen), 134
British Geon, Ltd., air-house with PluViaC skin, 610

- Hat and Allied Feltmakers Research Association, discussion in Parliament on work of,

British Industrial Engineering Co. (Staffs)

British Industrial Engineering Co. (Staffs)
Ltd., Reel overhead travelling crane with
Vicrendeel girders, 357
British Industrial Plastics, negotiations with
Algemene Kunstzijde Unie, 251
— Industries, Federation of. See Federation
— Institute of Management, Retail Management Conference (Harrogate, 1959),
preliminary note on, 57; appointment
of P. G. Malins as manager of Midland
Region, 299; avoiding trouble in selling
goods overseas, by R. Joscelene, 457;
Centre for Interfirm Comparison, 662;
course in sales management, preliminary
notice, 812

notice, 812
Northern Management Conference (South-

Whole company as sales organisation, by ole company as sales organisation, by K. W. J. Jones, 511; planning the sales effort, by P. Randolph, 511; recruitment, training and development of sales force, by H. C. White, 511; controlling large sales force, by W. R. Bruce, 512; forecasting as function of management, by E. Broke Evans, 512

Radio Engineers library services and

of Radio Engineers, library services and technical information, 185
 Instruments Directory and Buyers' Guide

Instruments Directory and Buyers' Guide (review), 649
 British Insulated Callenders Cables, Ltd., interest in Telegraph Construction and Maintenance Co., 16; contract by Indian Railway Board for overhead equipment, 177; mineral insulated cable for damp atmospheres, 508; mineral insulated thermocouples, 717
 Internal Combustion Engine Research Association, research on engine exhaust fumes, 428

fumes, 428

Interplanetary Society, combustion liquid-propellent rocket engines, by D. Carton, 36; rocket nozzles and exhaust jets, by E. T. B. Smith, 36; rocket propellents, by F. Fitzgerald, 279; plea for British space research in collaboration with

Commonwealth, 362; radio astronomy and navigation, by C. M. Cade, 744

Iron and Steel Federation, Safety (publication), 235; Statistical Handbook, 311; Durgapur steelworks staff training scheme in UK, 537; co-operative training scheme in Sheffield forges, 537; exchange scheme, 605

and Steel Industry Translation Service, 283

and Steel Research Association, Steel Users Section, 99; research on steelworks cranes, 163; television in steel industry, 191; determination of nitrogen in steel (book), 411; development of gaugemeter, 521; exchange visits with Russia, 763 Conference on Iron and Steelworks Buildings:

Foundations to iron and steelworks buildings, by W. S. Atkins, 220; some notes on iron and steelworks buildings at Corby Works, by T. E. Clements, 220; some notes on modern steelworks structures, by E. F. Wooldridge, and N. Lancaster, 220; load distribution through melting shop D. B. Wilson, 220; superstructures to iron and steel works buildings, by K. F. Geesin, 220; iron and steel

works buildings, by E. Ibbotson, 220; framework of buildings in France, by A. Delcamp, 221; iron and steelworks buildings in Germany, by Dr. G. F. Drath, 221; research and development in buildings and structures in the iron and steel industry, by Dr. J. S. Terrington, D. Buchanan, and P. D. Thompson, 221; architectural aspects of iron and steelworks buildings, by F. Gibberd, 221

British Journal Photograph Almanac 1959 (review), by A. J. Dalladay, 649

British LaBour Pump Co., Ltd., DSZ direct

British LaBour Pump Co., Ltd., DSZ direct mounting horizontal centrifugal pump, 485; MSZ horizontal flooded suction

485; MSZ horizontal flooded suction centrifugal single-stage process pump, 485
British Lead Mills, Ltd., Voboma 34 and 68 for moisture-combatting plasters, 587
British Manufactured Bearings Co., Ltd., production of miniature bearings under ultra-clean conditions, 415
British Methane, constitution of, 232

British Methane, constitution of, 232
British Motor Corp., Ltd., chairman's annual statement, 39; 1,489 cc series B motor car engine for MG Magnette, 171; overseas tour by Sir L. Lord, 177; successes at Sestrière Rally, 368; additional bonus scheme for day-rate operatives of Austin motor works, 537; Riley 4/68 motor car, 612; manufacturing agreement with SIAM Di Tella, 723

612; manufacturing agreement and SIAM Di Tella, 723

British Moulding Machine Co., Ltd., automatic moulding machines, 722

British Museum, Mancut spring balance, 531

-- National Association of Suggestion Schemes,

National Association of Suggestion Schemes, proposed formation of, 451
 British Northrop Ltd., U.G.1 universal grinding machine, 632; P.G.1 plain cylindrical grinding machine, 632
 Nuclear Energy Conference, convention on thermonuclear processes, 574
 British Nylon Spinners, Ltd., overalls for factory use, 453; gloves for protection against abrasive materials, 453
 British Oil Equipment Credits Ltd. formation

British Oil Equipment Credits, Ltd., formation,

British Overseas Airways Corp., twin cell test bed for Proteus turbo-prop aero engines at Nantgarw, 95; jet services around the world, 296; Boeing 707 Intercontinental jet airliner for, 434

British Oxygen Co., Ltd., flame-cutting machine with computer control, for ships plates, 485; Linde low-temperature stress relieving method for welded platework, 651; BOC Metallurgical Powder Dispenser for desulphurisation and recarburisation of cast iron, 748

British Oxygen Gases, Ltd., Model LC3

British Oxygen Gases, Ltd., Model LC3 storage cylinders for liquid oxygen, 684; Coval storage container for liquid oxygen,

- Paper Industry (1495-1860), industrial growth, by D. C. Coleman (book), 61

British Petroleum Co. Ltd., formation of Sinclair and BP Sales Inc., 435; 50 years anniversary, 536; Milford Haven project, 700; trading profits, 796

British Physical Laboratories, surface roughness tester, 69

British Plaster Board, Ltd., Blue, Hawk tiles

British Plaster Board, Ltd., Blue Hawk tiles for CIBA (ARL), Ltd., new building, 707 British Plastics Yearbook 1959 (review), 649

British Plimber Ltd., chipboard (trade publication), 283

Railways, PEP broadsheet Paying for the Railways, 2; effect of policy of, on loco-motive and rolling stock industry, 77; diesel locomotion plan, 78; improve-ments for London Midland Region traffic, 163; progress of Fenchurch ments for London Midland Region traffic, 163; progress of Fenchurch Street-Southend railway electrification scheme, 171; diesel passenger trains in Scotland, 201; delays due to engineering works, 298; discussion in Parliament on supersession of steam locomotive, 298; electrification progress, 298; modernisation plan, 298; Bethnal Green rail-overroad bridge replacement, 408; timber conoid roof for Oxford Road station, Manchester, 408; crucible deliveries by Condor express freight train, 435; modernisation programme, discussion in Parliament on, 535; electrification progress, by Sir B. Robertson, 567; driverless trucks at Newton Abbot goods shed, 589; prefabricating stations for LM Region, 611; centralised signalling system at Newcastle tabricating stations for LM Region, 611; centralised signalling system at Newcastle Central Station, 624; repairs to Cononish Viaduct, 642; contracts, 643; re-alignment and flyover at Barking, 670; railway closure proposals, 672; completion of Potters Bar tunnels, 707; Temple Mills marshalling yard, 738; workshop and sidings extension and modernisation for East Kent coast services at Ramsgate and Stewarts Lane, Battersea, 776; drivers' training school at Stewarts Lane,

- Locomotive 1803-1853, by G. F. West-cott (book), 343

cott (book), 343
British Reinforced Concrete, BOAC test bed at Nantgarw, 95
British Resin Products, Ltd., Rigidex polyethylene for Handycan liquid container, 600; Cellobond synthetic resins for shell moulding, 722; Rockite K501 moulding compound (trade publication), 746; polymer for Courlene X3 polyethylene yarn, 748

— Road Federation, urban roads exhibition, 190; schedule on road schemes, 323; "See How They Go," chart on road schemes in Scotland, 776

— Services, grain carriers of aluminium

Services, grain carriers of aluminium alloy (Scammell), 749
 British Rototherm Co., Ltd., Rototherm high-temperature thermometer for diesel

engines, 486
Safety Council report on seat belts and harnesses for private and commercial vehicles, 297. See Letter, 324; safety examination of equipment and seal of approval, 595 British Scientific Instrument Research Association, instrument inquiry service, 392. See Letter, 451

- Shipbuilding compendium, 1959 (review),

Research Association, marine boiler refractories research, 619

Standards Institution, work on flame-resistance and non-inflammability, 201; work on voluntary committees of, 321; national approvals scheme for electrical industry, 535; "ideal" office chair, 685; conference on application of standards to industry, 781; conversion factors and tables. Part I (book), 778

Codes of Practice: Earthworks, 775; Fire resistance of prestressed concrete, 763;

Codes of Practice: Earthworks, 775; Fire resistance of prestressed concrete, 763; tile flooring and slab flooring, 611

Specifications: ball and parallel-roller bearings, 188; coke, 234; conversion factors and tables, 553; electric refrigerators, 628; fusion-welded pressure vessels in carbon and low alloy steel, 59; grinding wheels, 125; letter symbols, signs and abbreviations, 631; plastics scales for architects, 340; plastics tests (miscellaneous), 59; refrigerated display cabinets, 340; split cotter-pins, 340; steel girder bridges (revised), 280

British Steel Piling Co., Ltd., Driam machine for helically welded pile casings, 804

British Tabulating Machine Co., Ltd., merger with Power-Samas Accounting Machines, 103; amalgamation with Powers-Samas Accounting Machines, Ltd., 167

British Tanker Co., Ltd., Sulzer diesel engine for tanker British Fulmar (Alexander Stephen), 134

British Tap and Die Co., new factory at Edmonton, 536

British Thomson-Houston Co., Ltd., changes in directorate. 71: gas circulator for

British Thomson-Houston Co., Ltd., changes British Thomson-Houston Co., Ltd., changes in directorate, 71; gas circulator for Berkeley atomic power station, 269. See Correction, 395; Explorer diesel-electric mixed-traffic locomotive for varying climates, 276; electric voltage regulator, 326; synchronous welding equipment, 326; Escort marine radar, 407; library, 519; two-dimensional electronic coordinate setting system for Kearns universal horizontal boring machine, 561-562; selsyns (trade publication), 586
British Timken Ltd., Isomantle electric surface heaters for grease tanks, 382; Timken

heaters for grease tanks, 382; Timken Roller Bearing Co.'s offer for control of, 536; bearing manufacture (trade publication), 650

Tion), 630
British Titan Products Co., Ltd., extension to titanium pigment plant, 796

— Trade Fair, Lisbon, 234, 251, 369, 691

— Transport Commission, electrical testing laboratory at Willesden, 218; redundancy agreement in railway workshops, 573; see also British Railways

Printle Transport for Ltd.

British Typewriters Ltd., elbow board for reduc-ing latigue, 319
British Vacuum Cleaner and Engineering Co.,

Ltd., floor cleaning and drying machines, Welding Research Association, resistance

casting (stud raising) spot welding process 59; translation of Russian journal Avtomaticheskaya Svarka (Automatic Welding), 160, 501

Brittle materials compression tests on, 799
Brix, V. H., on shaft stability in gas film
bearings, 178

bearings, 178

Broadcasting, stereophonic, "compatibility" circuit for single channel reception (Bell Telephone Laboratories), 384

Brock, Dr. G., on direct models as aid to reinforced concrete design, 468

Brodie, J. L. P., obituary, 419

Bronowski, Dr. J., director-general of Process Development Department, NCB, 630

Bronx Engineering Co., Ltd., levelling machines, 390; six roll plate levelling machine, 762

Bronze, sintered element in fuel filter, 45

Bronze, sintered element in fuel filter, 45

Brooke, H., on piped water supplies, 596; on advertisements control, 660

Brookes, A. M. P., impact machine for Naval Construction Research Establishment, 800

Brookhaven National Laboratory, MRR research reactor for medical use, 462

Brookhirst Switchgear, merger with Igranic Electric, 16 com, H. S. Dick, annual statement on

Broom & Wade, 199
Broom & Wade, Ltd., air power units (trade publication), 93; annual statement, 199;
Broomwade two-stage air compressor, 485; design development of oil-flooded rotary compressors, 522
Broomwade two-stage air compressor (Broom

Broomwade two-stage air compressor (Broom & Wade), 485
Brown, Boveri Corp., tenders for US heavy engineering equipment, 328; generator order for Los Angeles, 369
Brown, D., on Aston Martin DBRI/30 sports car, 393
Brown, David, Corp., position and prospects of, 167; proposal to purchase interest in Foote Bros. Gear and Machine Corp., 536
Brown, David, Industries, Ltd., position and prospects of Automobile Gearbox Division, 296; full load efficiency testing of turbine gear units, 306; David Brown 950 tractor, 406; steel fabrication work at St. Andrew's Road (Huddersfield) factory, 785; gear manufacture by welding, 785; 785; gear manufacture by welding, 785; axle cases for Toronto underground trains, 786; chassis fabrication for Aston Martin motor car, 786; pipeline valve body, 786; Perspex model of frigate

body, 786; Perspex model of frigate gear case, 786

Brown, David, Jackson Division, manufacture rights of Knapp Mills shielding, 303

Brown, John, & Co., Ltd., contract for refuelling machine for AGR reactor, Windscale, 401

Brown, S. G., Ltd., Arma Brown gyroscopic compass, 749
Brown, T., on processes for combating pneumoconiosis, 330

Bruce, H. H., off-peak floor heating fallacies, 592. See LETTER, 663
Bruce, W. R., on control of sales force, 512
Bruce-Clayton, E. H., on automatic landing, 656
Brunel, I. K., anniversary of, 10; contribution to bridge engineering, by P. S. A. Berridge, 538
Brunner, C. T., and the same statements of the same statements of the same statements of the same statements.

Brunner, C. T., on large scale organisation and change: oil marketing, 562

Brush Electrical Engineering Co., Ltd., battery-operated tractor for factory use,

— Gas turbine for gasifier-turbine-driven compressor, 49

Brussels Universal and International Exhibition, Philips pavilion at (review), 778; The Survey (publication), 801
Brymbo Steel Works, Ltd., pre-refining hot metal for electric arc furnaces, 657
BSA Tools, Ltd., Snap-Lock Switch, 762
BTR Industries, Ltd., Terylene-rubber conveyor belting for Russian ore field, 284; industrial hose (trade publication), 554
Buchanan, D., on buildings and structures in iron and steel industry, 221
Buckle, G. H., and Partners, heat recovery in sterilisation process at Kitt Green factory of H. J. Heinz, 782
Buckley & Taylor, Ltd., Aquaflash flash distillation plant for sea water, 229
Buckling, plastic, of plates in shear, values of reduction factor for, by B. Emslie (book), 778
Budget, comments on, 599

Budget, comments on, 599 Effect on engineering industry, 482 National Institute's views on, 418

— Tax concession forecast in, 418 - Taxation reduction, plea for, 162
Buffers, hydraulic railway, Maranyl nylon seals for, 432
Bugatti, Ettore, automotive inventions of, 200, 207

Building, Arcon, steelwork fabricated in Lagos, 543

Construction, applied, 2nd year course, by A. Medlycott (book), 123

New methods of Coseley Buildings, Ltd.,

See also Concrete, reinforced
Cranes, boom in Germany, 226
Design of, as composite whole, work of Building Research Station, 63
of, requirements of, 525

Early industrial, functional tradition in, by
J. M. Richards (review), 777
Exhibition, Dexion Ltd., preliminary notice,

Factory, requirements and performance, 354
House, conservatism in, Plain Words on,
162. See LETTER, 291
— under plastics tents, 272
Industrial, discussion in Parliament on, 234

Industry, incentives in (report), 73
 Position and prospects of, 148
 Iron and steelworks, architectural aspects of, by F. Gibberd, 221
 and steelworks, conference on (BISRA),

— and steelworks, at Corby Works, by T. E. Clements and J. T. E. Williams, 220 — and steelworks, by E. Ibbotson, 220 — and steelworks, foundations to, by W. S. Atkins, 220

— and steelworks, in France, framework of, by A. Delcamp, 221
— and steelworks, in Germany, by Dr. G. F. Drath, 221

— and steelworks, research and development in, by Dr. J. S. Terrington, D. Buchanan and P. D. Thompson, 221
— and steelworks, superstructures to, by K. F. Geesin, 220

Autorials (trade publication), 618

Materials (trade publication), 618 Modular coordination in, 707

Modular coordination in, 707
Northern Canada, technical report, 643
Office, with gold-anodised aluminium curtain wall, Hollywood, 804
— New, in London, 234
Operations, safety in, chemical engineer looks at, by B. Halfpenny, 397
Railway, at Hither Green, contract to Taylor Woodrow, 495
Research Division of National Research Council (Ottawa), study of damaging

Council (Ottawa), study of damaging reactions in concrete, 128. See LETTER,

- International Council for. See International Council

National Institute of. See National Institute

— Station, review of work at, 62; roof drainage (digest), 64; surveys on factory noise, 234; heat pumps for house warming, 352; design of multi-storey factory (booklet), 354; perforated brick, 495; survey of drawing offices, 506; survey of design and equipment of drawing offices, by Dr. F. J. Langdon, 558; packed system of brick handling, 671; effect of wind loading on roofs, 707

Standardisation in, ECE meeting, 611

Steel and concrete for, composite construc-Institute

Steel and concrete for, composite construction in, by I. M. Viest, R. S. Fountain and R. C. Singleton (book), 29

— Framed, Arcon, for National Iranian Oil Co., 391

— Framed, automatic design of, by Dr. J. Heyman. See Letters, 68
Structures to withstand earthquakes, by D. A. Howells, 346, 631. See Letter, 599
Thin shell structures, by F. Candela, 495
Work for RAF, 392

Bulgaria, economic position, 727
Bulge, Carr Report on, 417
— Industrial impact, by J. Wellens (pamphlet),

- of school-leavers, comment on, 481
- Leavers, discussion in Parliament on, 493
- the, by J. Wellens (booklet), 386
Bulk materials elevator (Russell Construc-

Bulk materials elevator (Russell tions), 601
Bulletin de L'Association Technique Maritime et Aeronautique, No. 58 (book), 746
Bullows, Alfred, & Sons, Ltd., Hydrovane air compressors for dental drills, 230; Binks hose coupling for fluid lines, 728

Buma Engineering Co., Ltd., boring machine

for restricted positions, 600

Bunkers, vibration of brick or concrete, 447

Bureau of Standards. See United States

National

National

Veritas rules, 1958, 443

Burgess Products Co., Ltd., microswitches (trade publication), 746

Burgess, R. E., progress in semi-conductors.

Vol. III (review), 801

Burington, R. Stevens, handbook of mathematical tables and formulas (book), 746

Burmeister & Wain, diesel engine output, 167; licence agreement with Russia for building

Burmeister & Wain, diesel engine output, 167; licence agreement with Russia for building new diesel engines, 264; 10,400 b.h.p. 6-cylinder diesel engine for tanker, 752; 15,000 b.h.p. 12-cylinder diesel engine for tanker Altaür, 752; 25,000 b.h.p. 12-cylinder diesel engine, 752

Burndept Ltd., detector for counting pressoutput, 70

Burner, oil, MacFire automatic (Urquarts), 38— Natural draught vaporising pot type, for Silver Flame domestic boiler, 96

Burnet, Sir M., on migration, 142

Burns, T., on Management in the Electronics Industry (pamphlet), 386

Burroughs Adding Machines, Ltd., high-speed electronic teleprinter, 5

Burroughs Corp., high-speed electronic tele-

electronic teleprinter, 5
Burroughs Corp., high-speed electronic teleprinter, 5
Bursary in timber engineering, 707
Burton Griffiths & Co., Ltd., RIG Spark erosion equipment, 761
Burton, H. C., on suggestion schemes, 259
Burtonwood Engineering Co., Ltd., ball bearing seal, 294
Bus design and operation, improvements in, by R. Cox, 621

by R. Cox, 621

— Shelter, Manchester, with light-alloy structure, 94 Busbars, aluminium (trade publication), 746

- Relays for high current d.c. systems (Londex), 809

(Londex), 809

Bush, carbon, for grinding spindle with hydrodynamic gas bearings, by Dr. S. A. Sheinberg and A. M. Kharitonov, 677

Bush Crystal Co., Ltd., commercial production of piezoelectrics, 345

Bushing, ball, for precision linear motion (Ransome & Marles), 471

— Electrical apparatus, Dialam (Permali), 557

Business Administration, Institute of. See Institute

Institute

— Efficiency Exhibition, Olympia, preliminary notice, 659; exhibits at, 698
— Enterprise: its growth and organisation, by R. S. Edwards and H. Townsend (review), - Small, hardship due to clearance schemes,

— See also Small Business Investment Act
— and specialised publications of Great
Britain (booklet), 217; (review), 310
Buswell & Sweeney, Ltd., Master Bar jig
boring machine, 5
Butadiene production at Fawley (Esso), 24
— in synthetic rubber production, 25

— in synthetic rubber production, 25

Butex system for processing irradiated uranium, 173

Butler, Dr. O. I., on A.C. dynamic braking of induction motors, 590
Butterfield, W. P., stainless steel road tanker for gas liquor, 748; AT nickel road tanker for phenol, 748
Butterworth Publications, Young Scientist, note on, 29
Buyers' guide and directory, British instruments (review), 649

ments (review), 649

Engineer (review), 649 Heads and threads (review), 649

— Machinery's annual, 1959, by K. A. Hill (review), 649

BX Plastics Ltd., Velbex and Cobex-Velbex plastic for Stelvetite plastics coated steel, 210; injection moulding materials (trade publication), 283

Bypass construction work on pay 450

Bypass, construction work on new, 450

— Doncaster, contracts for, 579

— Kingston, dual carriageways for, 707 Maidstone, contract for western section to Sir Robert McAlpine & Sons, 391
 Preston, frost damage to, 131, 171
 Stamford, on Great North Road, 776

CAB, "Relaxé," for Berliet heavy commercial vehicles, 45
Cabin, aircraft, pressurising of, 215
Cabinets, assembly, pressurised, Bassaire, 415
— Display, refrigerated, British Standard on,

Furniture, design manual for, comment on

Furniture, design manual for, comment on book, 96
Shot-blasting, Sitdown (Guyson Industrial Equipment), 487
Cable, copper (booklet), 780
Electric, fixed bobbin stranding machine for (Larmuth and Bulmer), 623
— Polythene insulated and sheathed, for Southend Pier (Telcon), 374
Exports of, 146-147
Insulated, aluminium for (booklet), 780
Manufacturing industry, position and

Manufacturing industry, position and prospects of, 145 Mineral insulated, for damp atmospheres (BICC), 508

Price fixing terminated, 691 Repair ship, tender invitation for new, 720 Rubber conduit strip for (Vulcascot), 633

- Rubber, shore hardness, elastomer E372 (ICI), 309
- Scotland-Newfoundland, 418
- Ship for GPO, 418

- Tracer, transistorised, Metrawatt (Metrix), See also Electric Cable Makers Federation

Cable & Wireless, Ltd., invitation to tender for new cable repair ship, 720 CABMA Register of British Industrial Products for Canada with the Canadian Distribu-tors, 1959-60 edition, 126

Cade, C. M., on radio astronomy and naviga-

Cadmium sulphide luminescent crystals, 497 Caesium gas for thermoelectric device, 492 Liquid, in thermoelectric device, 394 Recovery from radioactive wastes, 394

Cahan, G., atomic power plants (book), 502 Caisson foundations for stamp shop at Hawker Aircraft factory at Squires Gate, 214 Calcium silicate insulation, Newtherm (Newalls

Insulation), 503 Calcul de l'Écoulement en Conduites Sous Pression ou a Surface Libre, by P. A. Arghyropoulos (book), 650

Calculation, how to do it quickly, by H. Sticker (review), 801
Calculator, magnetic core (IBM), 698

— Relay (trade publication), 650 Calder Hall type reactor, aseismic reinforcement for, by Tachu Naito et al., 79 Calibration of miniature oil velocity indicator,

Calico Printers' Association, extension of Terylene patents, 391
California University, discovery of Xi-zero particle, 367

particle, 367
Callover internal telephone system (Siemens Edison Swan), 698
Callway, M. (H.R.), Ltd., Presil bench top aerosol filler machine, 198
Caltex (UK) Ltd., withdrawal of planning permission application for oil refinery at Southampton, 701
Calyton Dewandre Co., Ltd., D9 combined heater and demister, 143
Cam followers. Nadella needle and roller

Cam followers, Nadella needle and roller bearings for (trade publication), 554

Operated rotary Style C-switches (Chilton),

Cambered bodies, slender, subsonic drag and pitching characteristics of, by K. D. Harris (book), 778

Harris (book), 778
Cambridge Instrument Co., Ltd., instrument pointer position for desired value at centre of scale, 69; electronic recorder (trade publication), 802
Cambridge University, course on manager's role and responsibilities, 11; industrial management course, 605; Titles of Dissertations, 649; see also Churchill College
Camera, cine, and industrial research, DSIR

Camera, cine, and industrial research, DSIR conference, 763
Miniature, document copying with, note on, Mountings for jet aircraft, anti-vibration,

Cammell Laird, demarcation dispute, 669 Camp Bird, Ltd., review of growth of, 16 Campbell Denis Ltd., ceiling for Heinz factory at Kitt Green, 578

Campbell, Donald, world water speed record, 694 Camping equipment, new designs in, 224 Camps, M., on Free Trade Area negotiations, 726

Camshaft for AT diesel engines (Ruston & Hornsby), 305
Can, polyethylene, Handycan, for liquids (Lacrinoid), 600

Canmaking at Heinz featory at Kitt Green, 576
Canada, British firms in, 509

— Sales in, 723

— CABMA Register of British Industrial
Products for, 1959-60 edition, 126

— as electrical machinery market, 274 - Exports to, discussion in Parliament on, 635

Northern, building in, technical report, 643
Trans, highway progress, 776
Vickers Ltd.'s activities in, 208

Canadian Association of British Manufacturers and Agencies, CABMA Register, 1959-60 edition, 126

Canadian Industries, Ltd., TA type gas turbine for (Ruston & Hornsby), 312
Canadian National Industrial Production Show (Toronto), British exhibits at, 723
Canadian Pacific Airlines, Operations Development investigation on Britannia airliner by Bristol Aircraft, Ltd., 787
Canadian Standards Association, specification on modular coordination in building, 707
Canadian-Vickers, Ltd., history and activities

Canadian-Vickers, Ltd., history and activities of, 208; office machinery manufacture, 208; printing machinery manufacture, 208 Canals, Bowes Committee on, 290 Monkland, improvements to,

Pocklington, improvements to, 776 Rajasthan, progress on, 804
 Staffordshire and Worcestershire, improvements to, 776

Stratford-on-Avon, improvements to, 776
Worcestershire and Staffordshire, improvements to, 776
See also Waterways

Canberra aircraft for Science Museum, 536

— Successor for, 39. See also 2

Candela, Prof. F., on anticlastic shells, 495; on architectural shells, 643. See Correc-

Canned food, production at Heinz actory at Kitt Green, 576, 782
Canning, atomic reactor, aluminium 136

Reactor, beryllium, 139 Reactor, magnesium, 136 Reactor, materials for, 136

Reactor, steel, 138 — Reactor, zirconium, 137 Canning, R. G., installing electronic data processing system (review), 122

Rods, atomic reactor, installation by distillation method, 137 distillation method, 137
Canning, W., & Co., Ltd., new building for metal finishing technical service, 509; electroplating laboratory for CSFRO, 744
Canopy, aluminium and plywood, for Melbourne's music bowl, 610
"Canteen" automatic tea service (Automatic Canteen Co.), 325
Can protective plastics for ashestos cament

Cap, protective, plastics, for asbestos cement sheets, Turnall, 495 Capacitance probe in miniature oil velocity

indicator, 83
Capacitor bank, Maggi, AWRE, 703
— Tantalum, solid-electrolyte (Plessey), 70

Cape Asbestos Co., Ltd., Caposite asbestos slabs (trade publication), 283
Capital Issues Committee, limitation of activities, 194

Capricorn. See Plain Words articles

Capstan lathe. See Lathe

 Winch, pneumatic, portable (Globe Pneumatic Engineering Co.), 358
 Car loader, automatic, for cutting, palletising and loading bricks (Bradley & Craven), 454

Motor. See Motor car Rail. See Carriage; Railcar

Caravelle jet airliner, airworthiness certificate and progress of, 536 Carbide tools, turning alloy steels with, PERA report on, 319

report on, 319
Carbon bushes for grinding spindle with hydrodynamic gas bearings, by Dr. S. A. Sheinberg and A. M. Kharitonov, 677

Dioxide fire extinguishing plant for BOAC test bed at Nantgarw, 95

or or inflation of Dracone DI flexible cargo

vessel, 381

— Tube, metal-clad, Metica, 491 Carbonisation of coal, discussion in Parliament

Un. 2011.
 Low-temperature, for oil and smokeless fuel production, 428
 Plant for Walsall Gas Works (Woodhall-Duckham), 594
 Carburetted water gas. See Gas

Cardboard cartons, Thermotex glueing machine for (Lerner Machine Co.), 685 Careers, directory of opportunities for qualified men, 1959 (Bowes and Bowes), 29

Engineering (booklet), 11, 765 - Exhibition, preliminary notice, 605

for young people, NUT annual guide, 364 See also National Education and Careers Exhibition

Careless Talk Costs Jobs (booklet) (Vauxhall), 270 Cargo handling in container ships, 451

Lift vans and trucks with elevating bodies (Rootes Motors), 781

Ship. See Ship
Submarine. See Submarine, cargo
Vessel, flexible, Dracone D1, for oil transport, 381
Windle

- Winch with regenerative braking (Clarke Chapman), 484 Cargon Transport (GB) Ltd., Cargon transport system, 787 Carl Zeiss. See Zeiss

Carlyle, Robert, & Co., Ltd., Manchester bus shelter, 94
Carnegie, Dr. W., on dynamically isolated blade vibration test rig, 54; review of Matrix Theory for Physicists, 60
Carpenter, M., overseas technical representative Siemens Edical System 287

tive, Siemens Edison Swan, 787 Carr, C. C., on electric machinery (book), 154

Carr report on "the bulge," 417

— Training for Skill, 635

Carriage, railway, maintenance extensions for East Kent coast services, 776

Production statistics, 77 Wood or all-metal, 428

- See also Railcar Steam, Gurney, model of, 424 Carrimore Six Wheelers Ltd., aluminium alloy

grain carriers, 749
Carron, W., re-election as president of AEU, 637 Carter, F. C., on Post Office 700-type telephone, 512

Carter Gears, Ltd., variable-speed gears (trade publications), 60; type F variable speed gear, 484

gear, 484
Carter Refrigeration & Airconditioning, Ltd., reorganisation of, 480; formation of, 480
Carter Refrigeration Display, formation of, 480
Carter Thermal Engineers, formation of, 480
Carter Thermal Industries, formation of, 480
Carton, cardboard, Thermotex glueing machine for (Lerner Machine Co.), 685
Carton, D. or combustion in liquid-propellent

Carton, D., on combustion in liquid-propellent rocket engines, 36
Cartwright, A., on noise in flats, 192
Case-hardening. See Heat treatment Case, lifting tongs for close stacking of (Walter Somers), 808 Casella electronic particle counter and sizer

machine, 647
Cashmore, D. J., on inertial navigation in solar system, 679

Casings, glass fibre, for Bedford diesel industrial units (W. & J. Tod), 505

Cass Electronics, Ltd., Nira Tele-Tracer staff location system, 357

Cassegrain focus, parallax work at, 341

Cassidy, J., sheet metal work. Part II (book), 475

Cast iron in bridge construction, 538

— Cylinders and prisms, failure in compression of, 799

- Desulphurisation and recarburisation with BOC Metallurgical Powder Dispenser with BOC Metallurgical Powder Dispenser for (British Oxygen Co., Ltd.), 748

— Pipe flanges, tool for machining (Kitchen & Wade, Ltd.), 295

— by E. Piwowarsky (review), 216

— Pipe fittings, Paralloy Forging Quality (APV Paramount), 504

— Research Association, British. See

British Cast Iron

Research Association, British. See British Cast Iron
Tools, by Z. Eminger and V. Košelev (book), 475
Castigliano's theorem of compatibility for non-linear frameworks, 581
Casting, continuous, of ingots, in Russia, 797
Epoxide resins, Epophen Mould Seal for (Leicester, Lovell & Co.), 183
Finishing and dressing equipment at Foundry Exhibition, 722
Iron, creep of, BCIRA work on, 683
Dimensional and structural stability at high temperatures, 683
Growth of, BCIRA work on, 683

- Growth of, BCIRA work on, 683
- Output, fall in, 359
- Pearlitic malleable, electric furnace equipment for, at Ley's Malleable Casting Co., Ltd., 245

Casting, iron, steam applications, higher working temperatures study, 683

— Machines, die, semi-automatic, for light metals and brasses (Peco), 196

— Resin for electrical industry (Bakelite), 309
Catalytic combustion of exhaust gases, cobalt oxides for 684

Catalytic combustion of exhaust gases, cobait oxides for, 684

Catamarans at National Boat Show, 86

Catch phrases, Plain Words on, 130

Cathode ray tube, flat, NRDC, 128

— Tube, instrument, using helical post-deflection acceleration (Mullard), 88

— Tube, Memotron, in Infinite Persistence Solarscope ascillascope (Solartron), 70 Solarscope oscilloscope (Solartron), 70

Tube, temperature measurement display on, for up to 24 thermocouples, 102

— Tubes, Truvu (John Brennan), 264
— Tube, wide-angle, 128, 583
Cathodic protection, Guardion (trade publication), 586

tion), 586
Catmur Machine Tool Corp., universal measuring machine, 357; No. 3 jig boring machine, 600

Catterson-Smith, Prof. J. K., work for Indian Institute of Science, 130

Caunter, C. F., handbook of cycles collection at Science Museum: Part II (book), 29

CAV Co., DPA distributor pump for fuel injection, 17

Cawkwell Research, and Electronics Ltd.

Cawkwell Research and Electronics Ltd., instruments (trade publication), 618
Cawood Wharton glued timber beams, 707
Cebertowitz, Prof. A., preservation of leaning tower of Pisa, 73

GB. See Central Electricity Generating Board Ceiling for Heinz factory at Kitt Green (Campbell Denis, Ltd.), 578

— Illuminated acoustic, Siemens Ediswan Celotex, 589

Panels of hardboard and stellite (Bowater),

Celene petrochemical plant, loan for, 791
Cell, conductivity measuring, for electrolytes (trade publication), 618

Living, radiation and mutations in, by Dr.
H. E. Kubitschek, 537

Photoelectric. See Photoelectric
Celotex Ltd., illuminated acoustic ceiling panels, 589
Cement-aggregate reactions in concrete, 128.

Cement-aggregate reactions in concrete, 128. See LETTER, 483 Anti-corrosive, Acalor, at Heinz factory at Kitt Green, 578

Asbestos, fire protection of structures by (booklet), 804

- Products (Turners Asbestos Cement Co.), 452 Roof sheets, Magnum (Universal Asbes-

tos Manufacturing Co.), 683

— Sheet, Turnall plastics washer and protective cap for, 495
and Concrete Association, guide to concrete road construction: questions and answers (review), 61; transmission length in pretensioned concrete, by G. D. Base pretensioned concrete, by G. D. Base (book), 93; car parks (trade publication), 155; design of right concrete slab bridges for abnormal loading, by R. E. Rowe, 253; specific surface of concrete aggregates and its relation to workability of concrete, by B. W. Shacklock and W. R. Walker (book), 253; Candela's shells, 643; symposium on electronic digital computers, 667; clearing house for digital computer programmes, 671 Industry, accidents in, 671

Industry, accidents in, 671
— India, 209

Limestone reaction with, 128

Masonry, leaner mixes for, 804 Plant in Brazil (COMINCI), 57 Removal, Solution No. 307 for (Grant & West), 477

See also Concrete Centenary, Big Ben, commemorative stamp for, 298

- Engineering, in 1959, 10
- Potter, Thomas, Ltd., 231
- Royal Albert Bridge, Saltash, 538-540
- Science, in 1959, 10
Central Bureau for Educational Visits and

entral Bureau for Educational Visits and Exchanges, activities for 1959, 207 - Electricity Generating Board, "Operation Chimney Plume," 30. See LETTER, 99; appointment of E. Forth as chief generating engineer, North Eastern Division, 105; appointment of W. Warren as chief generating engineer, East Midlands Division, 105; report on activities of, 144; feed water and boiler water standards in. feed water and boiler water standards in, by R. L. L. Rees and F. J. R. Taylor, 247; by R. L. L. Rees and F. J. R. Taylor, 247; sites for nuclear power stations investigated, 269; new shield bearings for, 270; 275,000 volt overhead double circuit supergrid for Northfleet-Canterbury line, 291; Dr. J. A. L. Bonnell appointed nuclear medical officer, 302; atomic power station sites in Anglesey, 303; research laboratories at Berkeley, 367; site examination for coal-fired power site examination for coal-fired power stations in East Midlands, 419; application for atomic power station site at Oldbury-on-Severn, 426; atomic power station site investigations on Severn Estuary, 426; atomic power stations under construction, 426; examination of Earnley site for atomic power station, 535; civil engineering contracts for power station work, 579; Siting Nuclear Power Stations (pamphlet), 694; contracts placed for civil engineering work, 739. See also Power stations and Atomic power stations Central Eletrica de Furnas SA, hydroelectric power project for Brazil, 57

Heating. See Heating
Centre National des Industries et Techniques
(Paris), exhibition hall construction, 738

Centrifugal pump. See Pump Ceramic, alumina, Sintox, 555

- High-temperature properties of, by E. Glenny and T. A. Taylor, 91
- Manufacture methods, 90

Metals, bonding in, 91

— Materials, powder metallurgy of, symposium on, 90

Ceramics, piezoelectric, polycrystalline, in commercial production, 345

- Research Association, British. See British

Spray forming with plasma arc torch, 652 Tools, turning alloy steels with, PERA report on, 319

Valve, oscillator/amplifier UL11 (Ferranti),

Cerium 144 for thermoelectric generator, 395 Cermets, chromium-alumina, by J. B. Huffa-dine, L. Longland and N. C. Moore, 91 High-temperature properties of, by E. Glenny and T. A. Taylor, 91

Manufacture methods, 90
Molybdenum-chromium-alumina, by J. B.
Huffadine, L. Longland and N. C.
Moore, 91
Uranium dioxide stainless-steel, as fuel
components for APPR reactor, 141
— Oxide-iron, fabrication and properties
of, by W. J. Wright, R. B. Gibbon and
J. Williams, 91

R.N. See Furonean Organization for Nuclear

CERN. See European Organisation for Nuclear

Research
Chadburns (Liverpool), Ltd., cup-model vending machine, 266; vending machine for refrigerated beverages, 453
Chain pulley blocks with flameproof electrical

equipment (Geo. W. King), 809 Chair, office, "ideal," 685 Chalkley, A. P., obituary, 568

Chamberlain Group, overseas tour by L. R. H. Bell, 177

Chamberlain Industries, Ltd., calculator for angle of tube bending, 324; pipe bending (trade publication), 474; Staffa bending machine for steel bars, 761
Chamberlain Plant, Ltd., Jenbach diesel

driven mobile air compressor with air

cooling, 728
Chambre d'Équilibre, by A. Stucky (book), 618
Chandler, K. N., reflex reflectors (book), 253
Chandos, Lord, overseas tour of, 177; annual statement on AE1, 572
Channel Tunnel, borings against places

Channel Tunnel, borings across possible line for, 495 Water flow in, formulae in graphical form for, 473

for, 473
Chapel Cross atomic power station in operation, 367; centrifugal circulating water pumps for, 490; fluorescent lighting for control room, 491; opening of, 608; contractors for, 608; sleeved fuel elements, 702; storage pond, 702
Charles, D., commercial and industrial photography (book), 618
Charrington, Aslib Engineering Group's visit to Anchor Brewery, 377
Chart, friction, for air flow in straight ducts and pipes, by R. H. Young and J. M. Gasiorek (book), 746

— on road schemes in Scotland, "See How

on road schemes in Scotland, "See How They Go," 776 — Trainer-Tester, 511 Chassis, Aston Martin motor car, fabrication,

Haulage and tipper, Albion Reiver (Leyland Motors), 634

Motor-vehicle, aluminium alloy, 749 Checking Prepackaged Commodities, hand-book on, 745

Cheese, Gouda, bulk handling by De Producent, 58

Chemical Construction Corp. of New York, international expansion, 391

— Distillation plant, platinum (Johnson, Matthey), 747

Engineers descend for 605

Engineers, demand for, 605

Institution of. See *Institution*Looks at safety in building operations, by B. Halfpenny, 397

- Nomograms for, by O. P. Kharbanda (book), 154 Engineering course for Diploma in Technology, 11

Degree course, I.Chem.E. scheme, 757

— Development trends, 758 Industry, safety aspects of, 397 Plant, Russian order for (Vickers), 328 Processing in atomic energy industry, by Dr. R. Hurst, 172

— Vessels (trade publication), 185 Chemico. See Chemical Construction Corp. Chemistry of atomic reactors, 175 — Solution, papers on, 175 Chepstow Bridge over River Wye, 538

Cheque, wage payment by, committee on, 699 Chest X-ray examinations for mineworkers, 142 Chester, G. V., on properties of liquid helium,

Chesterfield Tube Co., Ltd., extrusion of beryllium tube, 49!
Chew, V., experimental designs in industry (review), 501

Chile, atomic energy programme, 12
Chilton Electric Products, Ltd., cam operated rotary Style C-switches, 21
Chilver, A. H., on problems in engineering structures (book), 184

Chimney plume operation by CEGB-Fairey, 30. See Letter, 99

ina, copper exports to, discussion in Parliament on, 493 Economic development, 791

Progress in Szechwan, 791 Exports to, 98

Industrialisation of, 98

Steel production statistics, 419 Trade potentials of, by Earl of Verulam, 788 Chip formation in metal cutting: hydro-dynamic theory, by M. M. Lamm, 444 Chipboard (trade publication), 283 Chipmunk floor cleaning machine (British Vacuum Cleaner & Engineering Co., Ltd.),

Chlorinated rubber. See Rubber Chokes for fluorescent lighting tubes, testing

life of, 32

Chromium-alumina cermets, by J. B. Huffadine, L. Longland and N. C. Moore, 91

Ore, purchase of Russian, by US, 387 Silicon-boron-nickel system, properties of,

Boron system, properties of, 90

Chrysler Corp., agreement with Simca, 796
Chuck, magnetic, Fimex (Darwins), 697
Churchill College, progress of, 142; Sir J.
Cockcroft as Master of, 142
Churchill Machine Tool Co., Ltd., automatic
electronic feed mechanism, 127; heavyduty roll grinding machines, 127
Chuter, E., Ltd., helicopter hangar, 579
ClB. See International Council for Building
Research and Documentation
ClBA (ARL), Ltd., Aeroweb aluminium
honeycomb, 283; new buildings for
research laboratory, Araldite production
plant and sales division, 706

plant and sales division, 706
Cigarette machines, 266
Cimex-Fraser Tuson, factory cleaning machines, 524
Cine camera and industrial research DSIR

Cine camera and industrial research, DSIR conference, 763
Cinema film. See Film, cinema
Circuit analysis of transmission lines, by J. L.

Stewart (book), 184 Breaker. See Switchgear

Design in oil hydraulic equipment, NEL, 749

Power, relief valves for, NEL study on, 685 Printed, 3A, for control system for MacFire oil-firing unit for boilers (Urquharts), 592 Switching, with computer applications, by W. S. Humphrey, Jr. (review), 585
Circulating Pump. See *Pump*Circulator, gas, for Berkeley atomic power station, 269. See *Correction*, 395

Citrine, Lord, on trade unionism and modern industry, 11
Citroen motor cars, assembly in South Africa,

City and Guilds of London Institute, award of

honorary membership, 321; expansion and activities of, 637; Insignia Awards in Technology, 727 Civil engineer; education of, remarks on, by Prof. A. J. Sutton Pippard, 707

— Institution of. See Institution

Engineering computer problem, clearing house for, 667 - Contracting industry workers, wage increase for, 164

Contractors, Federation of. See Federa-Dictionary, by J. S. Scott (review), 310

Industry, position and prospects of, 148 Plant, output statistics and exports of,

— Problems, digital terrain model for, 751
— Work for RAF, 392
Servants, dispersal from London, 363
— Institution of Professional. See *Institution of Professional* 

Service clerks, pay offer to, 73

— Communication between management and technical workers, 726

— Salaries, Coleraine Committee on, comments on, 364

— Salary increases in 225

Salary increases in, 235 Scientific, career booklet for graduates,

Clad metal for graphite tube, Metica, 555 Clark, F. H., on temperature-zoned reactor, Clark, Graham. See Graham Clark Lecture Clarke, Chapman & Co., Ltd., cargo winch with regenerative braking, 484; heat exchangers for Bradwell atomic power station, 525; tests on low-temperature stress-relief method, 652

Classification and construction of steel ships, rules and regulations for, 310
Clausen, H., plea for presentation of company histories to Newcomen Society, 3; on design of steel buildings, 68; on homemade brake tester, 663
Clay trees planted in ground movement pear.

Clay, trees planted in, ground movement near, 611

Clayton Dewandre Co., Ltd., air pressure gearbox servo unit, 464; wire wound heat exchanger tubes, 504
Clayton Equipment Co., Ltd., mechanical parts for Explorer diesel-electric locomotive, 276
Clean Air Act, requirements of, 525

— National Society of. See National Society

Assembly conditions at International Combustion, Ltd., 723 Production, equipment for (John Bass), 415 Rooms, Bassaire, for ultra-clean production,

Cleaner, man, Bassaire, 415-416 Cleaning and de-misting cabinet for goggles (Fleming Safety Equipment), 166 and drying machines for floors (British Vacuum Cleaner & Engineering Co.,

Factory, trends in, 524

Floor, machines for (Cimex-Fraser Tuson, Ltd.), 452 Machines for factories, 524
 of parts, Efco spray washing machine for (Electro-Chemical Engineering Co.), 729

of Sulfinuz treated parts, 119
Tool for small parts (Martindale Electric

Clearance schemes, hardship to small businesses due to, 428
Cleave, J. P., on mechanical resolution of linguistic problems (review), 184
Clearents T. F. on irret and steal works

Clements, T. E., on iron and steel works buildings at Corby Works, 220
Clerks, Civil Service, pay offer to, 73
Cleveland Bridge & Engineering Co., Ltd., automatic shot-blasting machine for heavy

steelwork, 439; Auckland Harbour Bridge, 739 Clifton Suspension Bridge, 538 Climax Rock Drill & Engineering Works, Ltd., Maxam control valves for pneumatic

hoists, 563

Clock, electric, automatic synchronous, with remote control (Electrical Remote Control Co.), 166 and watch yearbook, 1959 (review), 649

Clocking-in, Plain Words on, 566 "Closed shop" dispute at Ford Motor Co.,

Clothing monitor (trade publication), 216
— Protective (RFD) 491

Cloud study by satellite, 259
Clow, A. (Ed.), Science News 50 (book), 586
Clow, N. (Ed.), Science News 50 (book), 586
Clutch, Sprag (trade publication), 554
Clyde shipbuilding industry, position and prospects of, 572
CO. See Carbon Bayide

prospects of, 512

CO<sub>2</sub>. See Carbon doxide
Coach, railway. See Carriage; Railcar
Coachwork, plastics, repairs (Automobile
Plastics Co., Ltd.), 448

Coal ash, analysis of, by K. Archer et al., 64

— Board, National. See National Coal Board

— By-product research, 630

Carbonistion, discussion in Parliament on,

Carbonisation, discussion in Parliament on,

Competition between oil and, 201 Conversion into gas and oil (BCURA), 613 Conversion research, 630

Conveyors at Walsall Gas Works, 595

— Delivery methods, 660 — Demand estimates, fall in, 66

Exports, position of, 144

— Fired gas turbine, Locomotive Development Committee, 441 Gas. See Gas

- Gasification, discussion in Parliament on,

Gasification, new type plant for, 731
Handling, hydraulic grabs for (George
Cohen 600 Group), 292
— by tractor, U-blade for (Marshall Organisation), 643

House, sulphur release from (BCURA), 613 Industry in Europe, position and prospects of, 355 Position and prospects of, 7, 144, 630, 759

— Position and prospects of, 7, 144, 050, 759
— Mine. See Colliery
— Miners' strike in Belgium, 355
— Mining industry. See Coal industry
— Law, by J. Sinclair (review), 376
— Machinery, position and prospects of, 144
— Oil from, by low-temperature carbonisation, 428

428 Pipeline for transport of, 258

Pulverised, firing for closed-cycle air turbine (Escher Wyss), 63
Statistics for Europe, ECE, 355

Stocks, accumulation of, 630
Position of, 144

Position of, 144
 Summer prices, 660
 Utilisation Council, list of approved distributors for domestic solid fuel appliances, 660
 Research Association, British. See British Coal Utilisation
 See also European Coal and Steel Community

See also European Coal and Steel Community
 Coales, J. F., on instrumentation as engineering discipline, 790
 Coastal erosion in Isle of Sheppey, 392
 Coastwise Marine Disposal Co., licence for radioactive waste disposal in Pacific Ocean, 394
 Coating for concrete floors, Glocrete SR (Corrosion, Ltd.), 747
 Dip, Telcothene HD polyethylene powder for (Telegraph Construction & Maintenance), 748
 Nickel-phosphorus alloy, Kanigan process,

Nickel-phosphorus alloy, Kanigan process,

 Powder spray, 31-C (Metallizing Equipment Co.), 504 Protective, chlorinated rubber (trade publication), 650

PTFE, resin-bonded. Emralon (Acheson Colloids), 379 Spray-formed, of high-temperature materials

 — Tretoplast, for ceiling of Heinz factory at Kitts Green. 578
 Cobalt, journal on, 475
 — Oxides for catalytic combustion of exhaust gases, 684
 from sea bed, 567 from sea bed, 567

Cobex-Velbex plastics for Stelvetite plastics coated steel, 210
Coca-Cola Co., cold-drink vending machine,

Coca-Cola Co., cold-drink vending machine, 266
Coca-Cola Export Corp., vending machines for refrigerated beverages, 453
Cochran & Co., Annan, Ltd., vertical boilers (trade publication), 377, 760
Cockburns (Springs), Ltd., springs (trade publication), 554
Cockcroft, Sir J., Master of Churchill College, 142; on British nuclear power programme, 269
Cockcroft Walton neutron source machine.

Cockeroft Walton neutron source machine, AWRE, 770 Cockerell, C. S., hovercraft prototypes, 637 Co-extrusion of atomic fuel element, 80

Coffee vending machine, 267
Cogdale, R. L., European representative for Marconi Instruments, 787
Cohen, George, 600 Group, Ltd., hydraulic grab for cranes handling coal, 292; Jones KL12-20M mobile crane, 532
Cohen, George, Sons & Co., Ltd., disposal of London Transport trolleybuses, 264; Eldair alligator shear for mild steel, 696
Cohen, L. S., tables for design of heams and

Cohen, J. S., tables for design of beams and slabs (book), 184
Coignet, Paris exhibition hall, 738 Coil, heating, for tankers, 250
— for Sceptre IIIA thermonuclear apparatus,

Spring Federation Research Organisation, new laboratories of, 744
 Tinplate in, at Velindre Works of Steel Co. of Wales, 478

Winder (trade publication), 474 Coiling of steel strip at Brinsworth Mill, 23 Coke, British Standard for, 234

Coke, British Standard for, 234

— Conveyors at Walsall Gas Works, 595

— for open-burning grate, 234

Cole, E. H., thermodynamics of heat power (review), 217

Cole, H. G., on corrosion of metals by vapours from organic materials (book), 343

Colebrook-White formula for water flow in schangels and pieces 473

channels and pipes, 473
Coleman, D. C., on British paper industry (1495-1860) (book), 61

Coleraine Committee on Civil Service salaries, Collacott, Dr. R. A., on impact of drops; photographic record of disintegration, 440 Collar, Prof. A. R., on aeroelasticity, 17

Collective motions confe ence, Physical Society, 465

College of Technologists, membership of, 733 Collet's Russian catalogue of scientific books, 1959, 649

Colliery, closure of, by NCB, 144

Gas drainage, 779

Kiveton Park, Roofmaster supports for goaf debris, 717

Methane extraction, 779

Rufford, skip winding plant at, 338

See also Mine; Coal; Winding
Collins Radio Co., radio sextant, 744

Collins Submarine Pipelines, Ltd., pipeline for effluent from Winfrith Heath, 394

Collins Submarine Pipelines Overseas, Ltd., Shatt al Arab oil terminal, 495

Collisions. See Accidents

Colloidal graphite. See Graphite
Colmonoy Cr-Si-B-Ni alloy, 90

Colombo Plan aid for Trisuli hydroelectric power project, 803

Colonial horizontal steam engine, Tangyes, 381

Colston Research Society, Symposium on

Colonal horizontal steam engine, Tangyes, 381
Colston Research Society, Symposium on
Hypersonic Flow, 656
Colt shearing machine (Thos. W. Ward), 293
Colt Ventilation, Ltd., natural and fan
operated ventilating equipment, 452
Columbium, position and prospects for, 8
— Technology of, ed. by B. W. Gouser and
E. M. Sherwood (book), 123
Column, eccentrically-loaded, design by loadfactor method, by J. D. Bennett (book),
184

Tactor method, by J. D. Bennett (Book), 184

— Zebra, for solvent extraction process, 172
Colvilles, Ltd., Treasury loan for building of new strip mill, 103; roof ventilation and lighting at Ravenscraig works, 221; new strip mill, 354; annual report, 732
Combustion, catalytic, of exhaust gases, cobalt oxides for, 684
Combustion Engineering Inc. See Mitchell-Fairfield Combustion Engineering
Combustion Equipment, Ltd., Air-Lok Damper for boilers, 601

— in liquid-propellent rocket engines, by D. Carton, 36

— "M" system, licence agreements for (MAN), 296
COMINCI. See Companhia Mineira de Cimento Portland SA
Commemorative lectures, Plain Words on, 98

Cimento Portland SA
Commemorative lectures, Plain Words on, 98
Commerce, Advisory Committee on Further
Education for. See Advisory
— and industry, legal aspects of, by W. F.
Frank (review), 376
Commercial education, discussion in Parliament on, 571
— Report on, 397
Commercial Patents, Ltd., Hydropulsion unit for tug Tom Jay, 655-656
Commissariat a l'Energie Atomique, nuclear fusion course, 575
Committee on Space Research, constitution

Committee on Space Research, constitution and officers of, 55

and officers of, 35

Commonwealth, companies in: Babcock & Wilcox, Ltd., 402

— in: Crompton Parkinson, Ltd., 273

— in: Head, Wrightson & Co., Ltd., 337

— in: Ruston & Hornsby, Ltd., 89

— in: Vickers, Ltd., 208

— Conferences, discussion in Parliament on

- Conferences, discussion in Parliament on, 571

571
Commonwealth Development Finance Co., financial resources of, 363
Education Conference (Oxford), preliminary notice, 733
and Empire Year Book 1958-59, by R. S. Russell (Ed.) (book), 92
Institute, hyperbolic roof, 804
Motoring Associations and Clubs, Federation of. See Federation
Conference, 544
Scientific co-operation in, by Duke of

- Scientific co-operation in, by Duke of Edinburgh, 227

- Space research in collaboration with UK, 362

- Spaceflight Symposium, preliminary notice, 362

Training scheme for engineers from, 669
 See also Australia, etc.
 Communard motor car. 740
 Communications, plans of improvements in, 418

— Sources (trade publication), 802
— System, Deccafax Visual, at King's Cross Station, 659
Communism in France, 162
Compagnie Navale des Petroles, Altaïr motor tanker, 752
Compagnie de Recherches et d'Exploitation de

Petrole au Sahara, oil explorations in Sahara, 431

Companhia Mineira de Cimento Portland SA,

Companhia Mineira de Cimento Portland SA, cement plant project, 57
Companies in the Commonwealth: Babcock & Wilcox, Ltd., 402
— Crompton Parkinson, Ltd., 273
— Head, Wrightson & Co., Ltd., 337
— Ruston & Hornsby, Ltd., 89
— Vickers, Ltd., 208
— Histories, plea for presentation to Newcomen Society, 3
— See also History
— "House style" exhibition, 564
— Signs and symbols, 126
— Small, research in, 520
— Research results available to, 520
Compass, gyroscopic, Arma Brown, 749
Competition for aluminium street lighting standards, 560
— for inventions, Freeman, Taylor Machines,

- for inventions, Freeman, Taylor Machines, for new bridge over Tagus at Lisbon, 643

Complementary energy applied to non-linear braced frameworks, by Prof. J. A. L. Matheson, 581

Components (trade publications), 554

— Structural, probability of service failure of, by I. J. Somervaille, 806

Components, time recorder for (Blick Time Recorders, Ltd.), 324
Compound-slide table, low height (Grimston Electric Tools, Ltd.), 292

Compressed-air equipment (trade publication),

for extinguishing oil fires, 620 Gearbox servo unit (Clayton Dewandre),

See also Pneumatic Compression of cast iron cylinders and prisms, failure in, 799

of concrete cubes, failure in, 799
of sandstone cylinders and prisms, failure in, 799 Tests on brittle materials, 799

in elastic materials study under axial loading, 798

Compressor, air. See Air compressor
Computation, automation and control handbook. Vol. I, by E. M. Grabbe, S. Ramo, and D. E. Wooldridge (review), 713 and instrumentation in process development and plant design, symposium, 783

Laboratories, International Repertory of. See International

See International
Computers, analogue, instrument for simulating delays for (Elliott Bros. (London), Ltd.), 230

Applications, switching circuits with, by W. S. Humphrey, Jr. (review), 585

Automatic decimal point (1BM), 698

for building resistance to earthquakes, 347

Bulletin, British commercial, 585

at Business Efficiency Exhibition (International Computers & Tabulators), 698

Centre, International. See International
Computer Consultants, Ltd., British Commercial Computer Bulletin, 585

Consultancy service, Urwick Diebold, 695

Consultancy service, Urwick Diebold, 695 Control of flame-cutting machine for ships' plates, 485

plates, 485
- for design of steel frameworks for buildings, by W. J. Sutcliffe, 68
- Digital, components and circuits, by R. K. Richards (review), 682
- in design of electrical machines, by D. D. Stephen, 718
- Electronic, symposium on, 667
- Programmes, clearing house for, 671
- Stantec Zebra (trade publication), 802
- Structural analysis by, by M. B. Abbott, 666

Superconducting element for, 550
Superconducting element for, 550
System design of, at National Bureau of Standards (review), 682
Transistorised, for control, 784
Transistorised, PCTC (Ferranti), 87
Electro-hydraulic output printing machine for (Creed & Co., Ltd.), 241
as electromagnetic balance, 784
Electronic, management guide to by

Electronic, management guide to, by W. D. Bell (review), 122

— for motor car suspension design problems (A. V. Roe), 644
— Structural frame analysis by, by Dr. E. Lightfoot and F. Sawko, 18

Elements, superconducting: cryotrons, by Dr. J. M. Lock, 550
EMIDEC 1100, for J. Sainsbury, 695
Language translation by, by A. D. Booth, L. Brandwood and J. P. Cleave (review), 184

L. Brandwood and J. F. Clears (184)
184
for "Management Decision Game," 65
Mercury, programmes for, 53
Pegasus, for floor beam section determination, 18
Persons (trade publication), 650

tion, 18
Perseus (trade publication), 650
Photogrammetry for civil engineering problems, DTM system, 751
Printing machine, xerographic (Rank Precision Industries). 241
Problems civil engineering clearing house for, 667
in process control, symposium, 783
in production planning, 526

in production planning, 526 Programmes library (Ferranti), 132

Programmes library (Ferranti), 132
Sirius (Ferranti), 696
Society, British. See British
Twistor shift register for, five advance (Bell Laboratories), 53
in US industry, 419
Zebra, for transonic wind tunnel, 187
See also Data processing
Concrete, accelerated curing tests on, M. S. Thompson, 759

Concrete, accelerated curing tests on, M. S. Thompson, 759

Aggregates specific surface, and its relation to workability of concrete, by B. W. Shacklock and W. R. Walker (book), 253

Asphalt, Epon, for runway, 804

Association. See Cement and Concrete Association

Blocks for factory-built roads, 543

Bunkers, vibration of, 447

Cement-aggregate reactions in, 128. See

Cement-aggregate reactions in, 128. See LETTER, 483

— as construction material, 525
— in construction of Notting Hill Gate
Underground station, 383 Cubes, failure in compression of, 799

Curing by Ritecure spraying, 426
Damaging reactions in, 128. See Letter, 483
Dome for Australian Academy of Science,

Floors, Glocrete SR coating for (Corrosion, Ltd.), 747
 Inertia blocks for air compressor founda-

tions, 214-215 Institute, American. See American
Intrusion Prepakt, for repairs to Cononish

Viaduct, 642 Concrete, Ltd., Bison precast concrete (trade

publication), 185
Precast, Dow-Mac Process, for Russia, 435
Prestressed, beams for Heinz factory at
Kitt Green, 578
— for BOAC test bed at Nantgarw, 95
— Elevated roadways, design competition
for 190

Fire resistance of, 763

Piles at Hull docks, 670

Tests on, and properties of, work of Building Research Station on, 63

See also Prestressed Concrete Development Forum

ment Group

Concrete, prestressing, Lee-McCall system, developments in (McCalls Macalloy, Ltd.), 610

— Pretensioned, transmission lergth in, by G. D. Base (book), 93

Reinforced, construction for stamp shop at Hawker Aircraft factory at Squires

Oate, 214

Design, direct models as aid to, by Dr. G. Brock, 468

Design method for, 276

Foundations for Heinz factory at Kitt

Green, 577

— at Heinz factory at Kitt Green, 578

— Hyperbolic cooling towers (Mitchell Construction), 579

- Loading bay for Heinz factory at Kitt Green, 578

Moment-rotation curve for, 275

Prestressed for exhibition hall of Centre
National des Industries et Techniques, 738

Quay at Hull docks, 670

Road construction, guide to: questions and answers (review), 61

Roof for Manchester bus station, 94

Roofing tiles, increased use of, 192

Shell, anticlastic, lectures by F. Candela on, 495

Shell, roof for exhibition hall of Centre

on, 495

Shell roof for exhibition hall of Centre National des Industries et Techniques, 738

Slab bridges for abnormal loading, design of right, by R. E. Rowe (book), 253

Standard revised by American Concrete Institute, 543

and steel, composite construction in, for bridges and buildings, by I. M. Viest, R. S. Fountain and R. C. Singleton (book), 29

Structures on Danish railways, durability

(book), 29
— Structures on Danish railways, durability and maintenance of, by A. Jeppesen, 384
Concreting in hot weather, recommended practices for, 495
Condensing plant for High Marnham power station, 594
Condon, E. U., handbook of physics (review), 681

Condor express freight train, 435

Conductivity measuring cells for electrolytes (trade publication), 618

Recorder, electrolytic, for electrolytes (Electronic Switchgear (London), Ltd.), 717 See also Superconductivity

— See also Superconductivity
Conductor, semi. See Semiconductor
— Super. See Superconductor
Conduit strip, rubber, for cable (Vulcascot), 633
Confederation of Shipbuilding and Engineering
Unions, agreement on Payment for Holidays—Manual Workers, 637
Conference on emplication of standards to

days—Manual Workers, 637
Conference on application of standards to industry, 781

— Aircraft production (I.Prod.E.), 566
— Atomic energy industrial prospects (OEEC, Stresa), 176

— Energy, Peaceful Uses of. See Atomic Energy, Peaceful Uses of

— Buildings for iron and steelworks (BISRA), 220

Central Asia, preliminary notice, 450

ine camera and industrial research, DSIR, 763 Collective motions, Physical Society, 465 Commonwealth, discussion in Parliament

Commonwealth, on, 571

— Education (Oxford), 733

— Motoring, 544

Ergonomics Society, 10th anniversary

Ergonomics Society, 10th anniversary (Oxford), 489

European Conference for Industrial Management on Industrial Prospects in Nuclear Energy (Stresa), programme for, Fitting the job to the worker, EPA, 365

Foremen and shop stewards, Industrial Welfare Society, 105
House magazines, 1WS, 364
Human engineering, TUC, 693
Inspectors selection and training, 125
Institution of Professional Civil Servants, 726

726
International Labour (Geneva), 765
Management, Solartron, 131
National Federation of Ironmongers, 787
National Power Farming (Harrogate), 227
— Society for Clean Air (Llandudno), 227
Packaging training (New York), 177
Peaceful Uses of Atomic Energy. See
Atomic Energy, Peaceful Uses of
Price reduction, Incorporated Sales Managers' Association, 435
Radioisotopes in agriculture, 537
Reactor fuel technology, proceedings of, 394

Reactor fuel technology, proceedings of, 394 Retail Management (Harrogate, 1959), 57 Suggestion schemes, IWS, 701 Youth employment and industrial training schemes, 299

Conformal mapping and univalent functions, by J. A. Jenkins (book), 184

by J. A. Jenkins (book), 184
Congress, automatic controls, USSR, 553

— Nuclear, preliminary notice, 395
Conical shock, yawed, exact flow behind, by
G. Radhakrishnan (book), 311
Connecting rods of frame saws, fatigue
failure under corrosion, by J. Salokangas
(book), 586

(book), 586 Cononish Viaduct, repairs to, 642

Conquest bench-type photocopying and developing machines (Hall Harding, Ltd.), 389 Consolidated Electrodynamic Corp., agreement with Solartron Electronic Group on pressure pickups, 71

pressure pickups, 71 sociidated Pneumatic Tool Co., Ltd., lightweight support leg for rock drills, 230; Power Vane air compressors, 634; track-mounted drilling rig for large deep Consolidated

holes, 760
Consort radar equipment for small craft (Marconi), 471
Consortia, atomic energy in Norway, 80
— Energy, in Portugal, 110
— Energy, in Japan, 303
— See also under specific names of consortia
Constitution of Binary Alloys, by M. Hansen and K. Anderko (review), 154

Constock International Methane, interest in British Methane, 232
Construction (trade publications), 155, 185

— Building, applied, 2nd year course, by A. Medlycott (book), 123

— New methods of Coseley Buildings, Ltd., 39

and classification of steel ships, rules and regulations for, 310
Composite, in steel and concrete, for bridges and buildings, by I. M. Viest, R. S. Fountain and R. C. Singleton (book), 29

(book), 29
Equipment, European Committee for. See European Committee
Materials (supplement), 525
Prospect (supplement), 525
Testing of scantlings of metal-arc welded steel boilers and other pressure vessels, rules for (book), 746
Welded, for technologists, by P. Sahmel (review), 501
Distructional engineering industry, position

Constructional engineering industry, position and prospects of, 147

Work, statistics, 776

Tonstructors John Brown, Ltd., pipeline for effluent from Winfrith Heath, 394; instrumentation for Dounreay fast breeder reactor, 491

reactor, 491
Consul motor car, restyling of (Ford), 265
Consultant engineering in US, EPA report (book), 123

Consulting Engineers, Association of. See Association

Association

— Edwardian life of, 258

— and his contribution to the national economy, by J. S. Tritton, 489

— Role of, 489

Consumers Association, Ltd., survey of electric razors, 160; appraisal of domestic refrigerators, 628; Which? (publication), 628

Containers, refrigerated, for marine use (J. & E. Hall), 570
— Ships, by D. A. Argyriadis, 451
Containment, atomic reactor. See Atomic reactor Nuclear fusion. See Nuclear fusion

Continuous casting. See Casting Contracts, British Railways, 643 Iron and steel works buildings, 220 Penalty clauses in, 428

Contracting industry, position and prospects of, 148

of, 148

— Plant, output statistics and exports of, 148
Controls for Argosy aircraft, 75

— Atomic reactor, course on, 80

— Reactor, by J. Walker, 686

— Auto-transformer, of induction motor, 590

— Automatic excitation, cargo winch with
(Stothert & Pitt), 664

— Industrial processes, PCTC digital computer for (Ferranti), 87

— International congress, USSR, 553

— Metering pumps with (Distillers Co.), 633

— Miniature chain-grate stoker (BCURA),
613

613 — Progress of, 526 — Tractor, 112, 114 — Trend to, 524

— Trend to, 524

— See also Automation

Automation and computation handbook.

Vol. I, by E. M. Grabbe, S. Ramo, and

D. E. Wooldridge (review), 713

Boundary layer, for Hercules C-130 troop carrier aircraft (Lockheed Aircraft Corp.), 505

OS. Cabin, strip mill, air conditioning for, at Stewarts & Lloyds, Ltd., 557
Computer, of flame-cutting machine for ships' plates, 485
Dust, equipment for (Dallow Lambert), 452
Electrical, finger tip, for Werner milling machines (Rockwell Machine Tool Co.), 261

261
Equipment, types and applications, 784
on Escort marine radar (BTH), 407
Feedback, linear, analytical design of, by
G. C. Newton, Jr., L. A. Gould, and J. F.
Kaiser (review), 252
— Systems, by O. J. M. Smith (review), 252
Gear, transfer function analyser for testing
(Servo Consultants), 665

Gear, transfer function analyser for testing (Servo Consultants), 665
 Instrumentation exhibits at Engineering Exhibition, 491
 Monitoring instruments for, 783
 Position, of massive objects, by A. Tustin and others (review), 713

— Process, analogue methods, 784

— Computers in, symposium, 783

— Industries, 524

— Remote, Dupar system (trade publication),

Equipment for Holman Rotomotors (Maxam Power, Ltd.), 420

— Valves, actuator for (Limitorque Valve Controls, Ltd.), 422
Room equipment for London heliport, 543
Stop valve, Bi-Seat, for steam lines (Sir W. H. Bailey & Co., Ltd.), 621
Strata, glossary, tri-lingual (book), 29
System for Explorer diesel-electric loco-

System for Explorer diesel-electric loco-motive, 277

motive, 277

— MacFire oil-firing unit for boilers, printed circuit for (Urquharts), 592

— Sampled-data, by J. R. Ragazzini and G. F. Franklin (review), 617

— Turbocompressor plant, 51

Tape, of machines and production lines, 524

Theory, terminology and enistemology of

Theory, terminology and epistemology of, by Dr. L. Couffignal (review), 713 Thermotex glueing machine, Sextet auto-Thermotex glueing machine, Sextet automanual pulley for (Industrial Drives, Ltd.),

- Valve. See Valve
- See also National Control
Controller, electronic, for air conditioning systems, Transmatic, design development of (Teddington), 522

Convair. See General Dynamics Corp. Convair-Astronautics. See General Dynamics Convector open fires, 660 Convention, American Public Relations Associations (Chicago), 701 Convention, Australian Citizenship, 142

— Thermonuclear Processes, BNEC, 574, 598, 606, 702

- Transistors, IEE, 741
- Vending machine (London), 325
Conversion factors and tables, British Standard, 553

— and tables. Part I (book), 778
Converter-coupling, torque, compared with hydrostatic drive, 654
— Torque, compared with hydrostatic drive, 654

Conveyancer Fork Trucks, Ltd., battery-operated "reach" truck, 453; "Handtruck," "Skidtruck" and "Drumtruck" hand trucks, 453
Conveyor, belt, for cheese handling, 58
— Belting, Terylene-rubber, for Russian ore field (BTR Industries), 284
— Coal and coke, at Walsall Gas Works, 595
— Furnace, mesh-belt (Birlec), 556
— Life roller, Rapistan (Manufacturers' Equipment Co.), 665
— Pendulum, Flowlink (Fisher & Ludlow), 721
— Pneumatic, at flour mill of Barnes Milling, Ltd. (Thomas Robinson), 156
— Sonic-valve operated (Simon Engineering Group), 341
— Sandvik steel belt, for mineral wool blankets (Mineral Wool Insulation Co.), 294
Conway by-pass turbojet aircraft engine, Air

Conway by-pass turbojet aircraft engine, Air Registration Board's approval, 381
Conway, H. G., on automotive inventions of Ettore Bugatti, 200, 207
Coode & Partners, Dartford-Purfleet tunnel, 579

Coode & Partners, Dartford-Purfleet tunnel, 579
Cook, M. A., on science of high explosives (review), 28
Cook, Sir W., on manufacture of atomic fuel rods and on uranium processing, 238; member for development and engineering, UKAEA, 427
Cooke, R. Gresham, on effects of automation, 330; on foreign distribution of British science journals, 330
Cooke, Troughton & Simms, Ltd., self-adjusting levels, 101
Cooker, combined microwave and standard (Westinghouse), 812
Cooking stove, Bleuet, for campers, 224
Cooler, air, tubular, for Priest Rapids Dam (Heenan & Froude), 114
Hydrogen, for High Marnham power station, 594
Coolers & Vendors, Ltd., vending machines, 266; coffee and tea vending machines, 267
Coling coil for gravimetric flue-gas sampling apparatus, 287
Diesel engine (15,400 b.h.p.) (Stephen-Sulzer), 688

apparatus, 287

Diesel engine (15,400 b.h.p.) (Stephen-Sulzer), 688

Evaporative, for diesel engine installation, Voice of America (Mirrlees, Bickerton & Day), 38

Plant for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 783

Systems, Philips gas liquefying machine for (Research & Control Instruments, Ltd.), 679

Tower, hyperbolic raise

679
Tower, hyperbolic, reinforced concrete (Mitchell Construction), 579
Packaged, glass fibre (Film Cooling Towers (1925) Ltd.), 601
Coombs, K. L., appointed divisional manager, Webb Conveyors and Automation, 456
Cooper Roller Bearings Co., Ltd., ball bearings for Berkeley reactor servicing machine, 484
Co-ordinates, absolute, in machine-tool design, 53
Drilling, and, boring, machine, (Grimator, 1986)

Drilling and boring machine (Grimston Electric Γools), 532
Setting system, electronic, for Kearns universal horizontal boring machine (BTH), 562

(BTH), 562
Co-Partnership Association, Industrial. See Industrial
Copelin, P. W., on Vauxhall Motors, 488
Copper alloy strip, Kuniform, 555
— See also Brass; Bronze
— Cables (booklet), 780
— Development Association, copper cables (booklet), 780
— Exports to China, discussion in Parliament on, 493
— High-conductivity silver-bearing, for con-

on, 493

High-conductivity silver-bearing, for conductors (Yorkshire Imperial Metals), 556

Price of, 8

from sea bed, 567

Sections for electrical industry (Yorkshire Imperial Metals), 556

Tubes, plastics-covered, Kuterlex, 556

Copyflo automatic printer for xerographic computer printing machine (Rank-Xerox), 241

Copyflo 5 microfilm verography system for

241
Copyflo 5 microfilm xerography system for reproduction of drawings (Rank-Xerox, Ltd.), 698
Copying, document, Azoflex machine for (Ilford), 487
Profiling and routing machine (Rank Precision Industries), 455
Corby Works. See Stewarts & Lloyds, Ltd.
Cores and core-making, by F. D. Roper (book), 184
Cork-elastomer. Lloyde, Cork-elastomer.

Cork-elastomer, Uniphase Cork, gasket material, 210
Corliss motion in valve steam engine, 381
Cornell Dual Reactor facility, 79
Corning Glassworks, US agents for QVF Ltd. industrial glass, 251; agreement with QVF Ltd., 723
Corrosion, anti-, manual, 1958 (book), 184
— Fatigue failure of connecting rods of frame saws under, by J. Salokangas (book), 586
Corrosion Ltd., Glocrete SR coating for concrete floors, 747
— of metals by vapours from organic materials, by V. E. Rance and H. G. Cole (book), 343
— Resistance, effect of Sulfinuz treatment on, 120
— of Ozhennite alloy, 138

— of Ozhennite alloy, 138
Corrosive situations, lighting in (IES report)
(book), 93

Coseley Buildings, Ltd., progress in new construction methods, 39 Cosmic rays, studies of, 334

COSPAR. See Committee on Space Research
Costs, trend of, 451
Costain, Sir R., on Richard Costain, Ltd., 732
Costain, Richard, Ltd., staff share purchasing
scheme, 142; award of contract for construction of deep-water berth for supertankers in Persian Gulf, 231; Shatt al
Arab oil terminal, 495; annual report,
732; contract for work at West Thurrock
power station, 804
Cotter-pins, split, British Standard, 340
Cotton reinforcement for plastics bearings, 27
— Yarn, price fall in, 251
Couffignal Dr. L., terminology and epistomology of control theory (review), 713
Council of British Manufacturers of Petroleum
Equipment, formation of British Oil
Equipment Credits, Ltd., 628
— of Europe, membership of, 176; prize for
nuclear research, 176
— for Industrial Design, "ideal" office chair,
685
— of Scientific and Industrial Research (India),
foundation and activities, 300

of Scientific and Industrial Research (India),

of Scientific and Industrial Research (India), foundation and activities, 300
 Councils and Their Houses (report), 429
 of Trade and Technical Press, business and specialised publications of Great Britain (booklet), 217
 Counter, decatron, Elcontrol, in miniature oil velocity indicator, 83
 Impulse (trade publication), 650
 Particle, electronic, Casella, 647
 for press output (Burndept), 70
 Scintillation, as neutron detector, AWRE, 771

- Tally, Domatic (EJF Manufacturing Co.),

Counting equipment, type 1700 Scaler, 102

— tube, trochotron high-speed decimal (Mullards), 653

Coupler, hose, quick action (A. Schrader's Son), 632

Soni, 632
Coupling, eddy-current, Heenan Dynamatic, for blade protection on cutter-dredger Barbados, 114

— Electromagnetic, computer calculations for, 720

720

Flexible, for Explorer diesel-electric locomotive (Blackstone), 277

Hose, Binks, for fluid line (Alfred Bullows & Sons), 728

Pipe, demountable vacuum-tight, by W. P. White (book), 92

— Quick-action, for pipelines (Simon Handling Engineers), 505

— Swivel, for hydraulic systems (Avica Equipment), 621. See Correction, 720

Torque transfer, for marine drive (Metalastik), 434

Tube, KeelaTite (Industrial Hydraulics, Ltd.), 487

See also Clutch

See also Clutch
See also Clutch
Courlene X3 polyethylene yarn for ropes, 748
Course, atomic engineering and arc and glow discharges, 80
Chemical engineering degree, I.Chem.E. scheme, 757
Engineering for Diplome in Technology

Engineering, for Diploma in Technology,

Control and instrumentation of reactors, 80

Diploma in Technology, 11, 731

Industrial administration, 385

Manager's role and responsibilities, Madingley Hall, Cambridge University, 605

Manager's role and responsibilities, Madingley Hall, Cambridge, 11

Modern developments in marketing and distribution, preliminary notice, 812

Nuclear energy, catalogue of, 395

Engineering, 395

Engineering for home study, 141

Fusion (France), 575

Power, Imperial College (booklet), 463

Technology (chemical), Imperial College, 492

Oil-firing (NIFES), 73

— Technology (chemical), Imperial College, 492

Oil-firing (NIFES), 73

Operational research, London School of Economics, 258

Packaging (New York), 177

Part-time, student wastage in, 143

Presentation of technical information, 185

Road materials and construction, 739

Sales engineers, Newman Industries, 724

— Management, preliminary notice, 812

Sandwich, student statistics, 701

School-leavers, Metropolitan-Vickers, 573

Schoolboys, Wates, Ltd., 537

Senior technical executives (Harwell Reactor School), 80

Technical representatives, Birmingham College of Technology, 126

Traffic engineering, Yale University, 672

Courtaulds, Ltd., sales to Russia, 636

Courtney, Hughes & Partners, Ltd., Dautataro fire fighting vessel for Port Fiji, 622

Coval storage cylinder for liquid oxygen (British Oxygen Gases), 684

Coventry Gauge & Tool Co., Russian orders for machine tools, 328

Coventry Victor Motor Co., Ltd., engines (trade publications), 60; 20 h.p. aircooled diesel set, 569

Cowper, D., on suggestion schemes, 163, 195-196

Cox, R., on improvements in omnibus design and operation, 621

and operation, 621 btree, R. W., printing press order from Canada, 723 Crabtree,

Canada, 723
Crack detector, portable, for ferromagnetic materials (Fraser-Smith), 600

— Ultrasonic. See Ultrasonic
Cradley Boiler Co., Ltd., Steampacket three-pass packaged boiler, 295
Crago, W. A., on transport on and under the sea, 676; on new horizons for ships, 766
Craig, A. F., & Co., Ltd., air coolers (trade publication), 155
Crane accidents, 235

— Building work, boom in Germany, 226

— Crawler, with cantilever jib (R. H. Neal), 664

— Floating, diesel-electric 400 ton, Atlas, for Lake Maracaibo oilfields, 595

— Gantry, lightweight (Dexion), 808

— Rail maintenance, by D. B. Wilson, 220

— Hydraulic grabs for handling coal (George Cohen 600 Group), 292

Crane, Hydrostatic drive for, 655

— Industry in Germany, boom in, 226

— Mobile, Jones KL12-20M (George Cohen 600 Group), 532

— Overhead travelling, Reel, with Vierendeel girders (British Industrial Engineering Co. (Staffs), Ltd.), 357

Crane Packing, Ltd., free offer of gland extractor tool, 312; mechancial seals (trade publication), 554

— Safety in iron and steel industry (report), 235

— Steelworks, research on, 163

— Tower, 226

— Truck, MEI (Thomas Smith & Sons), 728

— Truck-mounted (R. H. Neal & Co.), 761

— See also Hoist: Transporter

Cranfield College of Aeronautics, exact flow behind a yawed conical shock, by G. Radhakrishnan (book), 311; flow over delta wings at low speeds with leading edge separation, by D. J. Marsden, R. W. Simpson, and W. J. Rainbird (book), 311; subsonic drag and pitching moment characteristics of slender cambered bodies, by K. D. Harris (book), 778; some values of reduction factor for plastic buckling of plates in shear (book), 778

Crankcase deflection measurement by model tests, 304

Crankshaft for AT diesel engines (Ruston & Hornsby), 305

Crankcase deflection measurement by model tests, 304

Crankshaft for AT diesel engines (Ruston & Hornsby), 305

Crawford, William, & Sons, sonic conveyor at bakery of, 341

Creed & Co., Ltd., electro-hydraulic output printing machine, 241

Creep of iron castings, BCIRA work on, 683

CREI atomics, home-study course on nuclear engineering, 141

Cresswell, R. A., review of rising economy and productivity through welding technology 501; review of welded construction for technologists, 501

Crewe, Plain Words on passing of era at, 2

Criticality, avoidance in dissolver and mixer settler vessels, 174

Crockett, J. H. A., consulting engineer for Hawker Aircraft factory at Squires Gate, 215

Crompton Parkinson, Ltd., activities in the

215
Crompton Parkinson, Ltd., activities in the Commonwealth, 273; T45 fractional h.p. motors, 697
Crops, frost protection by irrigation equipment (Wright Rain), 705
— Spraying helicopter, Kolibrie, 88
Crossley Bros., Ltd., HTBD series 6 cylinder diesel engine, 534
Crouch and Hogg, Loch Glashan hydro-electric scheme, 579
Crowe element (cryotron), 551
Crowley, J., on Crowley, Russell & Co., Ltd., 71
Crowley, Russell & Co., Ltd., position and

Crowley, Russell & Co., Ltd., position and prospects of, 71
"Crowning" in plate rolling, 754
Crucibles, delivery by Condor express freight train, 435
— Furnace. See Furnace
Crusader Brand NSR quality ground round tool and die steel stock, 414
Crusher, gyratory (Babbitless Co.), 728
Crushing and grinding: bibliography (book), 376
Crymlyn Burrows, Swansea, site of factory for

376
Crymlyn Burrows, Swansea, site of factory for Pressed Steel Co., Ltd., 328
Cryotron, Crowe element, 551
— in flip-flop, 550
— Superconducting computer elements, by Dr. J. M. Lock, 550
Crystal, luminescent, 497
— Quartz, synthetic, production by hydrothermal process, 219
Cuba, atomic energy programme, 12

thermal process, 219
Cuba, atomic energy programme, 12
Cubitts. See Holland & Hannen
Cubitts Fitzpatrick, Blackwall Tunnel, improvements, 803
Cummins Diesel International, establishment and activities of, 126
Cummins Engine Co., Inc., establishment of Cummins Diesel International, 126; British-built diesel engines for Canada, 435; trading report, 572
Cunard Steam Ship Co., Ltd., replacement of Queen liners, 482, 636
Cunliffe, G., retirement from board of British Aluminium Co., Ltd., 328
Cunningham, W. J., nonlinear analysis (book), 29
Cup-O-Matic bulk milk machine (Allied Pro-

29
Cup-O-Matic bulk milk machine (Allied Produce Co., Ltd.), 325
Cupola blast heater, independently fired (Incandescent Heat Co.), 722
— Hot blast equipment (Fuel & Metallurgical Processes, Ltd.), 722
Curing tests on concrete, accelerated, by M. S. Thompson, 759
Curium radioisotopes, production of 174

Thompson, 759
Curium radioisotopes, production of, 174
— Separation of, 174
Currency conversion factors, 2
Current, alternating, for dynamic braking of induction motors, by Dr. O. I. Butler and Dr. V. Ahmad, 590
Curtain wall, gold-anodised aluminium, for Hollywood office building, 804
— Heinz factory at Kitt Green, 577
Curtis, W. K., Shamrock plastics bodied prototype sports car, 708
Curtiss-Wright Corp., "Air-Car" prototype, 695

Cushyfoot "S" anti-vibration mounting for high-speed diesel engines (Metalastik, Ltd.)

485
Customs formalities, goods vehicles, 143
— Motorists, 143
Cutter, tube profile, Alyn (Saturn Industrial Gases), 534
Cutting, bricks, automatic car loader for (Bradley & Craven), 454
— Machine, flame, with computer control, for ships' plates, 485
— Glass tube (Electrothermal Engineering Ltd.), 730
— Oxygen Hancomatic, 785

Oxygen, Hancomatic, 785
Metal, chip formation in: hydrodynamic theory, by M. M. Lamm, 444

Cutting, strip, automatic production machine for (Press Equipment), 600
CVA Jigs, Tools & Moulds, Ltd., tape control of machines and production lines, 524
Cycle. See Bicycle
— Motor. See Motor cycle
Cyclotron conversion at Birmingham University, 772

Cyclotron conversion at Birmingham University, 772

— Spiral ridge, at Dubna, 772

Cylinder, air, midget (A. Schrader's Son), 534

— Block production for oil engine (Rolls-Royce), 810

— Head bolts, tests on, 304

— Fracture in diesel engines, 96

— Liquid oxygen storage (British Oxygen Gases), 684

Cylindrical components, straightness-measuring apparatus, by F. R. Tolmon, 124

Czechoslovakia, atomic energy programme, 12

— Economic position, 727

— FT Magazine on foreigh trade, 369

— International trade fair, 177

— Orders from, 312

Czechoslovakian motor cars at Geneva Motor Show, 329

D

DAG colloidal graphite, nuclear applications of, 47
Daimler Dart sports motor car, 496
Daisley, P. A., review of Experimental designs in industry, 501-502
Dalgleish, J., review of Camp Bird Ltd., 16
Dallender, J. A., mechanical engineering thermodynamics (review), 185
Dallow Lambert & Co., Ltd., dust control equipment, 452; wet deduster, 721; Dustmaster, 721
Dam, Aswan High, Russian agreement on, 34
— High, West German consortium investment offer, 34
— Kariba, strike of employees at, 428
— Loch Glashan, contractors for, 579
— Priest Rapids, tubular air coolers for (Heenan & Froude), 114
— South Saskatchewan river, 739
Damper, Air-Lok, for boilers (Combustion Equipment), 601
— Foundation, Lockheed, for stamp shop at Hawker Aircraft factory at Squires Gate, 214
— Nodal, for Explorer diesel-electric locomotive (Blackstone), 277

Hawker Aircraft factory at Squires Gate, 214
Nodal, for Explorer diesel-electric locomotive (Blackstone), 277
Torsional vibration, viscous, and its vector diagram, by G. S. Pidd, 784
Units, hydraulic, for Explorer diesel-electric locomotive (Blackstone), 277
Daniels, T. H., & J., Ltd., Daniels-Latymer vacuum forming machine, 485
Daniels-Boyd Nuclear Steam Generator, details of, 268
Daniels-Latymer vacuum forming machine (T. H. & J. Daniels, Ltd.), 485
Danish National Institute of Building Research, preparation of samples for microscopic investigation, by E. Poulsen (book), 253
Railways, concrete structures on, durability and maintenance of, by A. Jeppesen, 384
See also Denmark
Darby, Abraham, commemoration of his work

Darby, Abraham, commemoration of his work in 1709, preliminary notice, 245
D'Arcy, W. K., founder of British Petroleum Co., Ltd., 536
Darling, H. A., on workshop arithmetic (book), 343

Darlington, Prof. C. D., on control of evolution in man, 11
Dart, Daimler, sports motor car, 496

Turboprop aircraft engines, BEA overhaul facilities, 223
Dartford-Purfleet tunnel, progress on, 579
Dartmouth, Britannia Royal Naval College, change in entry regulations, 364
Darwins, Ltd., Fimex magnetic chucks, 697; annual report, 732
Data processing systems, electronic, installation of, by R. G. Canning (review), 122

— System, IBM 7090 (IBM United Kingdom, Ltd.), 318

— Tape recorder for (Emidata 1), 101

— Transducers for aircraft industry (CEC), 71

Recording and analysing system, typicitars

71

Recording and analysing system, transistorised, for neutron spectrometry (EM1 Electronics), 182

Sampled, control systems, by J. R. Ragazzini and G. F. Franklin (review), 617

Dautataro fire fighting vessel for Port Fiji, 622

Davey, Paxman & Co., Ltd., activities in Commonwealth as associate of Ruston & Hornsby, Ltd., 89; Vega range of air cooled diesel engines, 197; Ventura range of lightweight water-cooled diesel engines, 197

David Brown 950 treator, 406

David Brown 950 tractor, 406 Davies, J. H., silicones in electrical insulation, 309

Joyles, Prof. S. J., on Jenbach two-stroke oil engines, 404 d'Avigdor-Goldsmid, Sir H., on NATO science studentships, 330 Davison, C. St. C., on Mancur spring balance, Davy & United Engineering Co., Ltd., auto-

matic gauge control for strip, 521; strip mill for Steel, Peech & Tozer, 636

Dawe Digest house journal (Dawe Instruments)

Ltd.), 155

Ltd.), 155

Dawe Instruments, Ltd., Dawe Digest house journal, 155; audio oscillator (trade publication), 618; transistorised instruments (trade publication), 802

Deadman, G. E., review of Management guide to electronic computers, 122; review of Installing electronic data processing systems, 122.

"Deaf-Aid" internal telephone system (Siemens Edison Swan), 698

de Bruijn, N. G., asymptotic methods in analysis (book), 777

Decca Flight Log chart in "Operation Chimney Plume," 30

ecca Navigator System, discussion in Parliament on, 143 Radar for Vickers-Armstrongs airfield at Wisley, 737

Radar for Vickers-Armstrongs airfield at Wisley, 737
Deccafax Visual Communication System at King's Cross Station, 659
Decimal stepping tube, trochotron high-speed (Mullards), 653
Decisions, arithmetical checks on, by W. E. Duckworth, 459
Making and productivity, comment on book by Prof. S. Melman, 1
See also Management Decision Game Decontaminator, personnel, Bassaire, 415

Decontaminator, personnel, Bassaire, 415
Defence Plan, Five-Year, White Paper on, 226
Deflection, crankcase, measurement by model
tests, 304

Deformation of metals, effect of surface-active medium on, by V. I. Likhtman, P. A. Rebinder, and G. V. Karpenko (book), 502 Degenhardt & Co., Ltd., toolmaker's measuring microscope, 420; Technoscope hole viewer, 422

ing microscope, 420; Technoscope hole viewer, 422 de Havilland award for initiative, 170 de Havilland Engine Co., Ltd., HTGC reactor for ship propulsion, 640 de Havilland Propellers, Ltd., activities of, 521 de Hevesy, Prof. G. C., Atoms for Peace Award, 47

Award, 47
De-icing, Spraymat system, 749
Delapena & Son Ltd., induction heater generators, 696
De Lavel Steam Turbine Co., Savannah atomic merchant ship, 548
Delay simulation for analogue computers, instrument for (Elliott Bros.), 230
Delcamp, A., franework of iron and steel works buildings, 221
Delong Corp., deep-water berth for super-

works buildings, 221
DeLong Corp., deep-water berth for supertankers in Persian Gulf, 231
De Long Ltd., Shatt al Arab oil terminal, 495
Deloro Stellite, Ltd., sprinkle-fuse method of applying hard-facing alloys, 209; automatic spray-fuse hardfacing machine, 503
Deltic diesel locomotive for main-line operation, 298
Demag organic-moderated ship reactor, 548

Demag, organic-moderated ship reactor, 548
Demarcation disputes, 605, 669
Demister, motor vehicle, and heater, D9 (Clayton), 143

Denmark, atomic energy programme, 12

See also Danish

Density, gas, calculation in flue-gas sampling, 287 Smoke, of diesel exhausts, Smokemeter for,

Ringelman Scale for determination of,

Ringelman Scale for determination 3, 351

Dental drills, Hydrovane air compressor for (Alfred Bullows & Sons, Ltd.), 230

Department of Scientific and Industrial Research, new five-year plan for research expenditure, 33; grants for research projects, 105; noise in flats (report), 192; control of Tropical Products Institute by, 259; crushing and grinding: bibliography crushing and grinding: bibliography (book), 376; research on engine exhaust fumes, 428; 5-year plan for National Lending Library for Science and Technology, 458; activities of, 520; regional technical information centres, 672; report on social and psychological projects in technical information centres, 672; report on social and psychological projects in industry, 672; committee for review of fatigue in structures, 739; productivity measurement (booklet). 744; Fomescol emulsion breaking agent for reducing sea pollution, 747; conference on cine camera and industrial research, 763; see also under specific laboratories, research associations, research stations, etc. research stations, etc.

Dependencies, overseas, research in (booklet),

— Students in UK from, 733

— Technical education in (publication), 323
Depreciation of plant and machinery, by W.
Brownlie Hendry, 479

— Rates, periodical revision of, 479
De Producent, bulk handling of Gouda cheeses, 58
Design automatic of steel buildings by Dr.

Design, automatic, of steel buildings, by Dr.
J. Heyman. See LETTERS, 68

— Beams and 84

(back) 184 (book), 184

(book), 184
Data (supplement), 522
Domestic appliances, 692
Duke of Edinburgh Prize for Elegant, first award of, 692
Eccentrically-loaded columns by load-factor method, by J. D. Bennett (book), 184
Elastic, of structures, 275
Elastical methods by digital computer, by

Electrical machines by digital computer, by D. D. Stephen, 718
Experimental, in industry, by V. Chew (review), 501
Industrial, law of protection of, 731

— Protection of committee for inquiry into

— Protection of, committee for inquiry into laws on, 759
— in US (OEEC), 624
— Limit, of framed structures, by Dr. J. Heyman, 275

Heyman, 275

Machine tool, scholarships in, 97

Manual for cabinet furniture, 96

Design-by-Model policy (Matthew Hall), 525

New or improved, origin of (supplement),

- Plant, and process development, instrumentation and computation in, symposium, 783

Plastic, of structures, 275
Processing of (supplement), 522
Reinforced concrete, direct models as aid to, by Dr. G. Brock, 468
Research on, 646

Research on, 646
Right concrete slab bridges for abnormal loading, by R. E. Rowe (book), 253
Selection of best, by leading designers, 646
See also Patents, designs and trade marks
Designer, appearance, work of, by T. B. Dunne, 565
Industrial functions of 624

Industrial, functions of, 624
Selection of best designs by, 646
Despatching in warehouse of Benton & Stone,

Desulphurisation of cast iron, BOC Metal-lurgical Powder Dispenser for (British Oxygen Co.), 748

Detector for counting press output (Burndept),

Flaw, ultrasonic. See *Ultrasonic*Neutron, scintillation counter as, AWRE,
771

771

Oil mist (Graviner Manufacturing Co.), 486
Detergent foam for clearing gas wells, 747

Synthetic, in river pollution, trials on, 747
Deuterium cross section for break up of molecular ions, 702

Deuterium total reaction power density as function of deuteron particle density, 574

Tritium total reaction power density as function of deuteron particle density, 574

See also Heavy water de Vaucouleurs, Dr. G., life on Mars theory, 637

Developing and photocopying machines, Con-

Developing and photocopying machines, Conquest bench-type (Hall Harding, Ltd.), 389
Development and Resources Corp., development of Khuzestan region of Iran, 642
Dew point meter, Alnor Dewpointer (Electric Resistance Furnace Co.), 808
Dewhurst and Partners, Ltd., Dupar remote control (trade publication), 650
Dexion Ltd., Tecon timber products for roof construction, 543; building exhibition, preliminary notice, 685; universal grid for slotted angle, 685; lightweight gantry crane, 808

Dez hydroelectric and irrigation scheme (Iran),

Diakon as uncoloured powder polymer, 210 Dial gauges, high-precision, Junghans (Rubert & Co.), 358

& Co.), 358

Dialam apparatus bushings for electrical apparatus (Permali), 557

Diamond grits, "Pressure-Tested" (Diamond Tool Research Co. Incorp.), 309. See Correction, 588

Diamond Tool Research Co., Incorp., "Pressure-Tested" diamond grits, 309. See Correction, 588

Diavite Microtester for surface measurement

Diavite Microtester for surface measurement (H. Hediger), 352

Dictaphone Corp., Audio Instructed Manufacturing Operation (AIMO), 786

Dictating machines at Business Efficiency Exhibition (Aga Dictating Machine Co.), 698

System, centralised, Agavox Telediction (Aga Dictating Machine Co.), 698
Dictionary, aeronautical, Agard's, 61
Civil engineering, by J. S. Scott (review), 310
English law, by Earl Jowitt, 649
Named effects and laws, by D. W. G. Ballentyne and L. E. Q. Walker (review), 311
Oxford English, list of words for earlier references, 553
Portuguese-English, 343
DIDO reactor, high-pressure water loop for

DIDO reactor, high-pressure water loop for, 460

460
Die casting. See Diecasting
— Steel, Crusader Brand NSR ground round stock, 414
Diebold, J., on automation: impact on business and labour (report), 796
Diebold, John, and Associates Inc., computer statistics for US industry, 419; formation of Urwick Diebold Ltd., 695
Diecasting machines, semi-automatic, for light metals and brasses (Peco), 196
— Pressure, machine for (Peco Machinery Sales), 722
Diesel-alternator sets for multiple-unit Pull-

Diesel-alternator sets for multiple-unit Pull-man trains (J. Stone), 134

— Electric crane, Atlas 400 ton floating, 595

— Locomotive. See Locomotive

— Propulsion for trawler Falstaff, 375

— Engine. See Engine, diesel: Marine propulsion

Engineers and Users Association, annual report of working costs and performance, 95

95

Generator set. See Generator set

Plant operators' handbook, by A. K. L. McCrone (book), 502

Trains. See Railway trains; Railcar; and Locomotive, diesel

Diesindicator peak pressure indicator for diesel engines (Dunedin Engineering Co.), 729

Dietert sand strength testing machine (Ridsdale & Co.), 722

Differential voltmeter, d.c. and a.c. (Ad, Auriema, Incorp.), 390

Diffusion plants for uranium isotope separa-

Diffusion plants for uranium isotope separation, 202

— Stream, for isotope separation, 203
Digital computer. See Computer
— Terrain model, by C. L. Miller and R. A.

Laflamme, 751
/oltmeter. See Voltmeter Voltmeter.

Dinghy, sailing, Alpha class (Bossoms Boat-yard), 86 —— "Do-it-yourself," 87 Diode, semiconductor, types and applications 742

Diploma in Technology, 605, 731
Direct reduction of iron ore into sponge iron.
HyL process (M. W. Kellogg), 159
Directors, Institute of. See Institute
Directory and buyers' guide, British instruments (review) 649
— French industry, 1959 (review), 649
— Graphical signs and symbols, 343
— and handbook, metal industry, 1959
(review), 649
— Norwegian export, 1958-59 (review), 649

(review), 649

Norwegian export, 1958-59 (review), 649

Opportunities for qualified men 1959
(Bowes & Bowes), 29

Railway Officials and Year Book 1958-59

- Railway Officials and Year Book 1958-59 (book), 92

- Tait's electrical, of Australia and New Zealand, 1958-59 (review), 649

Disc brakes. See Brakes

- Turbine. See Turbine

Discharge, arc and glow, course on, 80

Discoverer I satellite, summary of details of, 616

Discoverer II satellite, summary of details of,

Dish washing machine, ultrasonic (Westinghouse), 812 Dispersions, ptfe, resin-bonded, Emralon (Acheson Colloids), 379 Displacement meter, photo-transistor, for vibration analysis (Fairey Air Surveys), 522 Display units for Kelvin Hughes unit system for marine radar, 262 Dissertations, titles of, Cambridge University, 649

Dissolver, Eversafe, at Dounreay, 174
Distillation of hydrogen, low-temperature, 204

— Plant, chemical, platinum (Johnson, Matthey), 747

Flash, Aquaflash, for sea water (Buckley & Taylor, Ltd.), 229
 Distillers Co., Ltd., temperature measurement

display on cathode ray tube for up to 24 thermocouples, 102; metering pumps with automatic control, 633; CO<sub>2</sub> equipment,

Distribution of Industry Act (1945), grants towards water and sewerage services in unemployment areas, 386

— Acts (1945-58), refusal of financial assistance under, 493

— (Industrial Finance) Act (1958), requirements of and provisions under 130.

ments of, and provisions under, 130; impact of, 143; claims submitted under, 258 in Scotland, 363

Distributive thaw, by N. A. H. Stacey, 787 Ditchburn Vending Machines, Ltd., Vitrinomat vending machine, 266

Diversification in aircraft industry, 41 Dixon, J. C., on low temperature stress reliev-ing of welded platework, 651. See Letter, 695

Djinn helicopter, 536 "Do-it-yourself" boat building, 87 — Orion astronomical telescope kit (W. Ottway & Co., Ltd.), 416

Dobson, Sir R., on Hawker Siddeley in Australia, 264

Dock, dry, construction and modernisation, Finance Bill amendment rejected, 695 — Floating, for submarine *Dreadnought*, 80

and harbour engineering, introduction to, by R. Hammond (review), 554

Hull, new facilities commissioned, 670
Labour Board, National. See National

Dock

Royal Victoria, tensions to, 94
Dockers, average earnings of, 733

Claim for pension and sickness benefit scheme, 48

Statistics on, 733
Dockyard, Portsmouth, floating dock for submarine Dreadnought, 80
Document-copying machine, Azoflex (Ilford), 487

— with miniature camera, note on, 777

Dollar area, exports to, increase in, 595

Dollin, F., review of steam turbine theory and practice, 745; review of steam turbine performance and economics, 745

Dolphin Floating Strainer (Megator Pumps and Compressors), 229

— Suction strainer (trade publication), 474

Domatic tally counter (EJF Manufacturing Co.), 166

Co.), 166

Dome, concrete, for Australian Academy of Science, 776

Geodesic, for railway repair shop, 473

Domestic appliances, effect of controls relaxation on, 67

Electrical, design of (GEC), 523

Electrical design in 692

Electrical, design of (GEC), 525
 Elegant design in, 692
 Dominion Bridge Co., Ltd., steel structures (trade publication), 185; annual report and activities of, 423
 Don Brake Meter for motor vehicle testing, 612
 Donaldson, P. E. K., electronic apparatus for biological research, 475

Donaldson, P. E. K., electronic apparatus for biological research, 475
Doncaster by-pass, contracts for, 579
Doncaster, Daniel & Sons, Ltd., manipulation of difficult materials (trade publication),

Door, sliding (trade publication), 377
Dorking Brick Co., Ltd., perforated brick, 495
Dorman, Long & Co., Ltd., Auckland Harbour
Bridge, 739
Dorman & Smith, Ltd., new Atherton Works,

Dossett, H. A., petroleum industry handbook (book), 217 Dough moulding material, polyester (Bakelite),

Doughty, C., on work for elderly persons, 330 Douglas, D. W., on need for space research, 66; on aircraft industry and airborne weapons, 572

Douglas Equipment, Ltd., 30 ton transporter, Douglas, R. M., remarks on road construction capacity, 671

Doulton Industrial Porcelains, Ltd., stoneware

(trade publications), 554
inreay Experimental Reactor Establish-Dounreay

ment, Eversafe dissolver at, 174; land-based atomic submarine project, 675 Fast breeder reactor, comparison of, 334

Breeder reactor, core skirt fabrication, Breeder reactor, instrumentation for

(CJB), 491

— Breeder reactor, instrumentation for (CJB), 491

— Breeder reactor, tests on, 335

— Materials testing reactor, flow diagram of chemical plant for, 174

Dover, television programmes from, ITA contract with Southern Television Ltd. for, 480 Dow-Mac Process precast concrete for Russia,

Dowding & Doll, Ltd., Accuratool capstan lathe for seated operator, 132; Russian orders for machine tools 328; Swiss "Rigid" transportable drilling, boring and milling machine for AEI, 502

and milling machine for AEI, 562
Dowsett Group, precast cement plant for Russia, 435
Dowsett Holdings, Ltd., 25 kW windmill for Isle of Man, 679
Dowson, Prof. A. G., on Operation Chimney Plume, 99
Dowty Equipment, Ltd., undercarriages for F.27 Friendship passenger aircraft, 505
Dowty Group, purchase of Rotol by, 199; staff planning, 517

Dowty Hydraulic Units Ltd., hydrostatic

Dowty Mining Equipment, Roofmaster hydrau-lic roof support at Cleveland coal show, 660

Doxford, William, & Sons, Ltd., new appointments at, 71
DPA distributor pump for fuel injection (CAV Co.), 17
DR-1 atomic reactor (Denmark), 12
DR-2 atomic reactor (Denmark), 12
DR-3 atomic reactor (Denmark), 12
— Reactor (Denmark), instrumentation for (Ekco), 462

DR-3 atomic reactor (Denmark), 12

— Reactor (Denmark), instrumentation for (Ekco), 462

Dracone D1 flexible cargo vessel for oil transport, 381

Dracone Developments, Ltd., D1 flexible cargo vessel for oil transport, 381

Drag, subsonic, and pitching moment characteristics of slender cambered bodies, by K. D. Harris (book), 778

DRAGON reactor project at Winfrith Heath, 239, 425; agreement signed for, 395

Drainage, roof (BRS Digest), 64

Drainer, suction, for machine tool sumps (Progress (Universal), Ltd.), 358

Drainpipes, Welvic pvc (IC1), 416

Drakelow C power station, plans for, 611

Drath, Dr. G. F., on iron and steel works buildings, 221

Draughting tables and machines, 559

Dravo Corp., annual report, 572

Drawing boards, design of, 559

Drawing boards, design of, 559

— Engineering, first year, by A. C. Parkinson (book), 29

— by P. S. Houghton (book), 61

— Offices, comfort in, 560

— Design and acquirement of by Dr. E. L.

Design and equipment of, by Dr. F. J. Langdon, 506

Equipment, 559

Layout and equipment of, by Dr. F. J. Langdon, 558

Langdon, 558

- Lighting in, by Dr. F. J. Langdon, 506

- Noise in, 560

- Practice, by P. S. Houghton (book), 61

- Space and layout, 558

- Ventilation in, 560

Paper, translucent, Duralax (Hall Harding), 345

345

Reproduction, Copyflo microfilm xerography system for (Rank Xerox), 698

Storage of, 558

Technical, by F. E. Giesecke, A. Mitchell and H. C. Spencer (review), 342

Dreadnought atomic submarine, 668; 675; floating dock and hull design for, 80; reactor plant for, 367; commander and crew of, 546; Skipjack-type propulsion unit for, 546; keel laying of, 735

Dredger, suction cutter. Barbados, Heenan

Dredger, suction cutter, Barbados, Heenan Dynamatic coupling for blade protection of, 114

Dredging, new method of, discussion in Parliament on, 392

Driam machine for helically welded pile casings, 804

Drier, rotary, for ICI fertiliser plant (Head Wrightson), 589

Drill air-driven general-purpose hand (Inger-

Wrightson), 589

Drill, air-driven general-purpose hand (Ingersoll-Rand), 101

Dental, Hydrovane air compressors for (Alfred Bullows & Sons, Ltd.), 230

Hand, electric, Safe-D-Speeder reduction gear for (John M. Perkins and Smith), 480

Kit, motorised (Selecta), 288

Motorised hand (Bridger), 289

Motorised hand (Bridges), 288

— Hand, Safetymaster (Wolf), 288

Rock, lightweight support leg for (Consolidated Pneumatic Tool Co., Ltd.), 230 Drilling and boring machine, Co-Ordinate

(Grimston Electric Tools, Ltd.), 532

— Fluid in Wairakei geothermal power project, 399

— Machine, horizontal, Kolb (Stanley Howard Ltd.), 730

— Tape controlled Wadkin (EMI Elec-

Tape controlled, Wadkin (EMI Electronics), 762

Transportable, Swiss "Rigid," 562 See also Boring machine, universal horizontal

Rig, track-mounted, for large deep holes (Consolidated Pneumatic), 760 in Wairakei geothermal power project, 398

Drinks, hot, vending machines for (Automat Machine Sales), 453 Drive, Adjusto-Spede fractional h.p. (Heenan & Froude), 327

Hydrokinetic, compared with hydrostatic, Hydrostatic, compared with torque converter and torque-converter coupling, 654
 Design and applications (Dowty), 654
 Sundstrand, for aircraft electrical equipment

(English Electric), 296 See also Power; Transmission Drivers, locomotive, training school, Stewarts

Lane, 776 DRNS insulating coating for magnet sector plates (Sankey), 755
Drobig, K. N., on contracts for iron and steel works buildings, 220

works buildings, 220
Drop stamp tup belting, Roko nylon, 504
Droplet, impact of, photographic record of, by Dr. R. A. Collacott, 440
Drum, brake. See Brake drum
— Suction strainer (Watson), 621
"Drumtruck" hand truck (Conveyancer Fork Trucks), 453
Dry dock. See Dock
— Processing at elastomers research laboratory of Du Pont Co. (United Kingdom), Ltd., 684
Dryer. See Drier
Drying and cleaning machines for floors (British Vacuum Cleaner & Engineering Co., Ltd.), 256
— and impregnation plant, high vacuum,

and impregnation plant, high v Hyvacoilfil (Barlow-Whitney), 416 Shed, prefabricated timber, 739

DSIR See Department of Scientific and Industrial Research DTM. See Digital terrain model
DTPA for plutonium removal from living

organisms, 302

Ductility of Kanthal iron alloy, effect of aluminium on, 139 Duckworth, J. C., appointment as managing director of National Research Develop-

director of National Research Development Corp., 331

Duckworth, W. E., on decisions, 459

Ducts, straight, air flow in, friction charts for, by R. H. Young and J. M. Gasiorek (book), 746

Duden Bildworterbuch, Der grosse, 343

Duke of Edinburgh Prize for Elegant Design, first award of, 692

— See also Edinburgh

Dumper truck. See Truck

Duncan, F. B., on Pulsometer's trading profits, 796

Dunedin Engineering Co., Ltd., Diesindicator

Dunedin Engineering Co., Ltd., Diesindicator peak pressure indicator for diesel engines, 729

Dunham, Prof. K. C., on need for financial assistance for non-ferrous mining, 330

Dunlop Rim & Wheel Co., orders from Czechoslovakia, 312

Dunlop Rubber Co., Ltd., electronic machinery for mixing rubber ingredients, 352; cinema film on disc brakes, 368

Dunna T. R. on appreciated designer, 565

Dunne, T. B., on appearance designer, 565
Dupar remote control (trade publication), 650
Duplicator, spirit, Bandamatic (Block & Anderson), 698
Du Pont Co. (United Kingdom), Ltd., elasto-

mers research laboratory at Hemel Hempstead, 684

du Pont de Nemours, E. I., & Co., study of heavy-water moderated reactors, 47; establishment of Swiss sales company, 391; use of mathematics, 529; annual report, 572, 604

du Pont de Nemours International SA, formation of, 391

Duralax translucent drawing paper (Hall Harding), 345

Durchflussmessung, by M. Hansen (book), 93

Durgapur steelworks staff training scheme in U.K., 537

Durham, Government department for, discussion in Parliament on, 363

Durham, W., on Successful Suggestion Schemes, 131. See LETTER, 163

Dust, coal. See Coal, pulverised

— Collector, Ludgate (trade publication), 502

— T1100 (Blackman), 569

— Control equipment (Dallow Lambert), 452

— Emission from boiler furnaces, measurement of (BCURA), 613

of (BCURA), 613

of (BCURA), 613

Extraction equipment, fettling bench with built-in (Newton Collins), 722

— Equipment at Foundry Exhibition, 72

— Hydro-precipitator for (Blackman), 570

in flue gases, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285

— Protector (trade publication), 216

— Radioactive, elimination of, 236

Dutch nuclear ship research body, 548

— See also Holland

ee also Holland Dwell-linkages in space, by K. H. Hunt, 248

Dynamatic coupling for blade protection on cutter-dredger Barbados (Heenan & Froude), 114

Dynamic balancing with gas film bearings, 179

— of grinding spindle with gas bearings, 678

Breaking of induction motors, a.c., by
Dr. O. I. Butler and Dr. V. Ahmad, 590

Response of process equipment, computation of, 783

Soil testing for stemps the

Tion of, 783

— Soil testing for stamp shop at Hawker Aircraft factory at Squires Gate, 213

Dynamics of deformable aircraft, 17

— Gas, fundamentals of, Vol. III, by H. W. Emmons (review), 713

Dynamo. See Generator, electric; Turbo-Generator

Generator Dynamometers for hydraulic equipment testing (Plessey), 549
— See also *Brake* 

## E

EARNLEY atomic power station site, discussions in Parliament on, 535 Earth continuity testers, Metrowatt (Metrix),

- Crust, Mohole project to drill hole through,

Mass loss of, 257

 Moving, atomic explosions for, AWRE study, 795 - Machinery industry, position and pros-

pects of, 148 Earthquakes, building structures to withstand, by D. A. Howells, 346, 631. See Letter, 599

Safety precautions for Japanese atomic

power station, 463

— See also Aseismic; Seismograph

Earthworks, British Standard, 775

East Central Nuclear Group Inc., heavy-water gas-cooled reactor research project, 425;

steam-cooled heavy-water moderated reactor, 674 India Dock Road bridge over Blackwall Tunnel North Approach, 803
 Midlands, power station site examination,

419 Moors Works. See Guest Keen Iron and

Eastern Electricity Board, electric floor warm-

ing, 192 Easton Amos & Sons, compound beam engine,

Easy-Roll roll-up ladders (Bentall-Alley), 628 EBR atomic reactor melt-down, 237 EBR-1 atomic reactor in US, comparison of,

Reactor, fuel element for, 141 EBR-II atomic reactor in US, comparison of,

Reactor plant, non-aqueous processing

EBWR reactor, fuel elements for, 141

EBWR-2 atomic reactor, 426 ECCE. See European Committee for Construction Equipment

ECE. See Economic Commission for Europe Eccles (Birmingham), Ltd., Flattie lift truck, 728

Eccles, Sir D., on need for financial assistance for non-ferrous mining, 330; on protectionism, 354

Echo-sounders, development of (Kelvin & Hughes), 522
Eckersley, Dr. T. L., obituary, 260
Eclipse boring tool holders for English pattern lathes (James Neill & Co.), 696

— Magnetic positioning unit for welding and fabrication (James Neill & Co. (Sheffield), 570

Economic analysis, forecasting by, 528

— Commission for Africa, establishment of, 98 of Furope, customs formalities eased for motorists, 143; coal statistics for Europe, 355; meeting on standardisation in building, 611; Gas Statistics for Europe, 631; Inland Transport Committee report on road traffic accidents, 644; problems of the gas industry, 659; Economic Survey of Europe, 726, 727

Co-operation, European Organisation for. See Organisation for European Planning and town and country planning,

566 Policy of UK in US, 535

Position and prospects in UK, 758

Recovery in Australia, 251

Review, National Institute, new publication, 99

— of Western Europe, 289 and Social Research, National Institute of. See National Institute of Economic and Social Research
— Survey of Europe, 726, 727
— World (1958), 758

Economics of ships in port, by R. M. Thwaites,

— Telecommunications, by T. J. Morgan (review), 342

(review), 342
Economy and productivity through welding technology (review), 501
— of Russia, Mr. Khrushchev's review of, 194
Edge preparation machine, Hancoplane, 723
Edinburgh, H.R.H. the Duke of, on scientific cooperation in Commonwealth, 227; See also Duke of Edinburgh Prize
Edison, Thomas, work of, 520
Ediswan-Mazda XA103 and XA104 transistors for home constructors, 96
Education, civil angineers, remarks on, by

Education, civil engineers, remarks on, by Prof. A. J. Sutton Pippard, 707

— Commercial, discussion in Parliament on, Report on, 397

Conference, Commonwealth (Oxford), 733
Engineering, American Society of. See
American Society

— Evaluation of (report), 170

— Requirements of, 170

— Toronto, 1851-1919, by C. R. Young (book), 29 Exhibition. See National Education

- Further, for Commerce, Advisory Committee on. See Advisory

- for workers in Russia, 235

- Industrial, facilities for, 457

- McMeeking report on, 733

Ministry of three work control investment

Ministry of, three-year capital investment programme for advanced technical educa-

Technical, advanced, three-year capital

Technical, advanced, three-year capital investment programme, 537
— in India, 302
— Progress in programme for, 701
— Regional Advisory Council for. See Regional Advisory Council
— in UK (bibliographical survey), 61
— in UK Dependencies (publication), 323
— and vocational, in Russia, by M. I. Movsovic, 733
— in US, progress of (publication), 733
— Vocational further, in Scotland, council for,

Vocational further, in Scotland, council for,

in UK (bibliographical survey), 61 See also Apprenticeship; Course; Scholar-ship; Teachers; Training; National

ship; Teachers; Training; National Education and Careers Exhibition
Educational Visits and Exchanges. See Central Bureau for
Edwards, F. J., Ltd., "Besco" pneumatic slide feed for power presses, 295; Besco plate bending rollers, 454; FJE machine hire plan, 631; Besco-Truecut metal guillotines, 730; Besco-Truebend press brakes, 808
Edwards High Vacuum, Ltd., electron beam

Edwards High Vacuum, Ltd., electron beam

welding process, 69
Edwards, J., appointed to chair of nuclear science and technology, R.N. College, Greenwich, 206; table of reactor materials, 269; on nuclear power plants: experimental programme, 460
Edwards, P. S. on business enterprise (review)

Edwards, R. S., on business enterprise (review),

Edwards, S. F., on gaseous plasma, 465 Efco industrial spray washing machines (Electro-Chemical Engineering Co.), 729 EFFBR atomic reactor in US, comparison of,

Effects and laws, physical, by C. F. Hix, Jr., and R. P. Alley (book), 746
Efficiency testing of turbine reduction gear units at full load, 306
Effluent from Winfrith Heath, pipeline for, 394

— See also Waste Egypt, atomic energy programme, 12

Financial discussions with UK, 34 Order for Ruston & Hornsby diesel engines and pumps, 57

and pumps, 5/

Trade resumed with, 435

80 Quick Kieselguhr for filtration (Charles H. Windschuegl, Ltd.), 683

80 Special Kieselguhr for filtration (Charles H. Windschuegl, Ltd.), 683

Eiselen, Dr. W. W. M., on harmonious

multi-community development, 397 Ejection seat for escape from submerged aircraft, 278

counter, 166

Ejector, Giesl, exhaust system for steam locomotives, 510
EJF Manufacturing Co., Ltd., Domatic tally

Ekco Electronics Ltd., instrumentation for DR3 reactor (Riso), 462
 Plastics polystyrene moulding for refrigerator, 345
 Elastic design of structures, 275

Materials, properties under axial loading,

Procter, 798
Turbine disc, effect on blade frequency, by J. P. Ellington and Dr. H. McCallion, 645
Elastomer-cork, Uniphase Cork, gasket material 210

rial, 210 E372 shore hardness cable rubber (ICI), 309 Research laboratory of Du Pont Co. (United Kingdom), Ltd., 684

Elbow board for reducing fatigue at British Typewriters, Ltd., 319
Elcontrol Ltd., decatron counter, in miniature oil velocity indicator, 83; process timers (trade publication), 746; photoswitches (trade publication), 802

Eldair alligator shear for mild steel (George Cohen, Sons & Co.), 696

Electric appliances, domestic boom in, 57

— Recommended (EDA), 628

— Sales position of, 145

— Cable Makers Federation, formation and activities of, 147

— Clock, automatic synchronous, with remote control (Electrical Remote Control Co.), 166

Components, low melting point glasses for (Bell Telephone Laboratories), 747
Equipment for aircraft, with Sundstrand drive and brushless alternator (English Electric), 296

Field for thermonuclear containment, 575 Furnace. See Furnace Generator. See Alternator; Generator;

Locomotive. See Locomotive, electric
 Machines, digital computers in design of, by D. D. Stephen, 718

Synchronous, digital computer for design of, 719
See also Alternator; Generator; Motor; Turbo

Machinery, by C. C. Carr (book), 154

Delivery statistics, 145
— Practical, by F. Unger (review), 123
Mains. See Cable
Motor. See Motor, electric
Ovens with external fan and heater (Hedin),

Plugs, fused, advantages of, 724

Power. See Power

— Station. See Power station; see also

Station. See Power station; see also Atomic power station
 Railways. See British Railways; Locomotive, electric; Railways
 Electric Resistance Furnace Co., Ltd., Alnor Dewpointer dew point meter, 808
 Switchgear. See Switch; Switchgear
 Technology USSR (Vol. 1) (book), 92
 Train. See British Railways; Locomotive; Railway train
 Vehicle Association of Great Britain, battery-electric vehicles, 663
 See also Electrical
 Electrical and Allied Manufacturers' Association, British. See British
 Appliances. See Electric
 Directory, Tait's, of Australia and New Zealand, 1958-59 (review), 649
 Energy, direct conversion of atomic energy

Energy, direct conversion of atomic energy to, 13, 575 — Direct conversion of heat to, 98, 110, 394
— Engineers, Association of Supervising. See

Association of Supervising. See Association of Supervising — Exhibition (London), exhibits at, 326 — Institution of. See Institution — Supervising, Association of. See Association

ciation
- Engineering, development trends, 758
- Exports, fall in, 418
- Industry in Australia, 273
- Industry in Canada, 274
- Industry, effect of electrification of British Railways, 567
- Industry in India, 274
- Industry in Italy, 291
- Industry, position and prospects of major firms in, 668
- Industry, price reductions in, 251 - Industry, price reductions in, 251 - Industry, Restrictive Trade Practices Act in, 572

Industry in South Africa, 273 - Industry, US, under bidding by overseas firms, 668

Industry, US, foreign competition, 369 Industry, US, protection for, 129 Physical basis, by T. L. Martin (book), 92

Equipment, flameproof, chain pulley blocks with (Geo. W. King), 809 Industry, light, position and prospects of, 145

Industry, national approvals scheme, 535 Insulation. See *Insulation* 

Insulation. See Insulation
Electrical Journal Blue Book and Electrical Trades Directory, 1959 (review), 649
Red Book (1958-59) (book), 61
Machine and machinery. See Electric
Plant, delivery statistics, 145
Potting and casting resin (Bakelite), 309
Power Convention, British (10th), 1958, proceedings of (book), 184
Electrical Remote Control Co., Ltd., remote control automatic synchronous electric.

control automatic synchronous electric clock, 166; SMS subminiature soldering iron, 454; miniature timer (trade publication), 650; load indicator (trade publication), 802

Research Association, programme-controlled tractor, 112, 114; technical reports (book), 217; wind power generator progress, 679; interference between power systems and telecommunication lines (review), 745; technical reports (books), 802

Resistance materials, properties of (booklet) (Henry Wiggin & Co., Ltd.), 501
 Testing (trade publication), 802
 Trades Directory, 1959, and Electrical Journal Blue Book (review), 649

Electrical Trades Union, TUC's approach to alleged balloting irregularities, 11; 'closed shop' dispute at Ford Motor Co., 299

— Uses of atomic spin, by G. Phillips, 743

Year book, mechanical world, 1959 (review), 649
See also Electric

Electricity, basic, Parts 1-5 (review), 802

— by P. B. Zaar and S. Schildkraut (book),

Board, Eastern. See Eastern

Co-operation with Gas Boards, Weir Committee report on, 511

(Borrowing Powers) Bill, proposals under,

34
— (Borrowing Powers) Bill, text of, 144-145
— Council, boom in domestic appliances, 57; capital investment plans, 145
— Direct conversion of fission heat to, 13, 575
— from heat, 98, 110; caesium for, 394
— Generating Board. Central. See Central
— Industry, cinema film on, AEI, 756
— in Scotland, plans for the future (publication), 34
— Static, in aircraft fuelling, 648

Static, in aircraft fuelling, 648
Supply to Canterbury and East Kent areas, 291

Industry in France, 195
Industry, position and prospects of, 144
North Scotland, 563
Standardisation of, 724 — Undertakings of the world (1958-59) (book),

Electro-Chemical Engineering Co., Ltd., Efco spray washing machines, 729
Electrode, welding. See Welding
Electrodeposition at Canning technical centre, 509

509
Electrodynamic balancing machine (W. & T. Avery), 632
Electroflo Meters, Ltd., potentiometers (trade publication), 650
Electro-hydraulic output printing machine for computers (Creed & Co., Ltd.), 241
Electrolytes, conductivity measuring cells for (trade publication), 618

— Electrolytic conductivity recorder for

For (trade publication), 618

— Electrolytic conductivity recorder for (Electronic Switchgear (London) Ltd.), 717

— Solid, in tantalum capacitors (Plessey), 70

Electrolytic conductivity recorder for electrolytes (Electronic Switchgear (London), Ltd.), 717

Electromagnetic disc brakes (Newman Industries), 455
Transducer (Woden Transformer Co. and T. S. Precision Engineering, Ltd.), 421
Electromechanical brakes (trade publication), 474

Themes in machine-tool design, by Earl

Inemes in machine-tool design, by Earl of Halsbury, 53
 Thrust units, Autoram (George Angus & Co.), 665
 Electron beam welding. See Welding
 Energy loss in pinch machines, mechanism of, 575
 Gas in metal 465

— Gas in metal, 465 Electronic aids in Escort marine radar (BTH),

Apparatus for biological research, by P. E. K. Donaldson, 475

Components (trade publication), 650

Show, British. See British

Computer. See Computer

Controller for air conditioning systems, Transmatic, design development of (Teddington), 522

Co-ordinate setting system for Kearge 407

Co-ordinate setting system for Kearns universal horizontal boring machine (BTH), 562

(BTH), 562

— Data processing. See Data processing
— Engineer's Reference Book, by L. E. C.
Hughes (review), 649

— Equipment for aircraft, mountings for, 373
— for arteriosclerosis treatment, 573

— Feed mechanism for roll-grinding machines (Churchill), 127

— Instruments for factory processes, 524

— Load-measuring tester at elastomers research laboratory of Du Pont Co. (United Kingdom), Ltd., 684

Electronic Machine Co., Ltd., radiation monitoring service, 299. See Correction, 573

— Measuring instrument, airborne, anti-

Measuring instrument, airborne, antivibration mounting for, 373
Particle counter and sizer machine, Casella, 647. Reading machines, FRED and ALFRED (EMI Electronics), 218
Recorder (trade publication), 802

Electronic Switchgear (London), Ltd., conductivity cells (trade publication), 618; tivity cells (trade publication), 618; RIC3 electrolytic conductivity recorder for electrolytes, 717 Teleprinter, high-speed (Burroughs Adding

Machines), 5

Electronically-controlled automatic tool positioning machine, Autoplot (Mullard), 5 Electronics (trade publications), 650, 746 - Engineer, information service for, 185
- Library service for, 185
Electronics Engineering Co., High Range for X-15 upper atmosphere research aircraft

Industry, management in, by T. Burns (pamphlet), 386

of microwave valves, by W. J. Kleen (review), 184 Research in, Government promotion of, 234

See also International Instruments, Electronics and Automation Exhibition Electropetrification of leaning tower of Pisa, 73
Electroplating shop for Canning technical
centre, 509

centre, 509

Wastes, treatment of, 763

Electrostatic generator. See Generator

Precipitators. See Precipitators

Sampler for polluted gas, 351

Electrothermal Engineering, Ltd., glass tube cutter, 730

Elektrische Maschinenverstarker, by G. Loocke (review), 475

(review), 475
Elevator for bulk materials (Russell Constructions), 601 Elisabethville airport, instrument landi system (Pye), 604

Elixir of youth, research on, 796
Ellington, J. P., on blade frequency of turbines, 645. See Correction, 800
Elliott-Automation Group, formation of Swartwout Co., Ltd., 456
Elliott-Automation, Ltd., automation operations (trade publication), 586
Elliott Bros. (London), Ltd., instrument for simulating delays for analogue computers, 230

Ellist Nucleonics Ltd., formation, appointment of directors and activities of, 47
Ellison, George, & Co., Ltd., air-insulated circuit-breaker, 327; 400A oil switch, 327; market research by, 528
Elm Engineering, Ltd., high-frequency welding of aluminium tube from roll-formed strip, 446

of aluminum strip, 446 Emanueli, Dr. L., obituary, 292 Embassy Machine & Tool Co., Ltd., Leifeld Pl b 1200 spinning lathe, 263; Pitzmann and Pfeiffer hydraulic deep drawing

Embrittlement, hydrogen, of zirconium alloys,

Emery wheels. See Grinding wheels
EMI Electronics Ltd., high speed tape recorder
for data processing (Emidata 1), 101; transistorised data recording and analysing transistorised data recording and analysing system for neutron spectrometry, 182; clothing monitor (trade publication), 216; FRED electronic reading machine, 218; ALFRED electronic reading machine, 218; closed-circuit television for PLUTO reactor, 491; Robotug driverless trolley system adapted for BR Newton Abbot goods shed, 589; EMIDEC 1100 computer for J. Sainsbury, 695; Wadkin tape controlled drilling machine, 762; industrial television (trade publication), 802 Emidata I tape recorder for data processing, 101

101
EMIDEC 1100 computer for J. Sainsbury, 695
Eminger, Z., cast tools (book), 475
Emmet, E., on work for elderly persons, 330
Emmons, H. W., fundamentals of gas dynamics. Vol. III (review), 713
Empire and Commonwealth Year Book, 1958-59, by R. S. Russell (Ed.) (book), 92
Employees, annual report of Blaw-Knox Co. for, 669
Employers' Confederation, British. See British—National Federation, Engineering and Allied
Employment in engineering industry, position

Employment in engineering industry, position and prospects of, 9 Machine tool industry, 110

North-East trading estates, statistics, 363 School-leavers. See School-leavers Statistics, 637, 701 Trend of, 451

Young people, BBC pamphlet on broadcasts on, 765
 Youth, discussion in Parliament on, 635
 See also Unemployment

Emralon resin-bonded dispersions of ptfe (Acheson Colloids), 379
Emslie, B., some values of reduction factor for plastic buckling of plates in shear (book), 778

Emulsion breaking agent, Fomescol, for reducing sea pollution (Glovers (Chemicals), Ltd.), 747

— Mixing unit for (Wakefield Dick), 422

Mixing unit for (Wakefield Dick), 422
 for nuclear research, automatic scanner for (Barr and Stroud), 102
 Road, modern (book), 376
 Silicone, M401 (ICI), 309
 Enamel, vitreous. See Vitreous enamel
 Encyclopaedia, radio tube, international, 1958-1959, by B. B. Babani (review), 310
 End point recording, automatic monitor for (AWRE), 102
 ENEA. See European Nuclear Energy Agency
 Energie Atomique, Commissariat a l'. See Commissariat

Commissariat Energy, complementary, applied to non-linear braced frameworks, by Prof. J. A. L.

Matheson, 581 Human, frozen, Prof. F. Roethlisberger on, 796

Engesser's theorem of compatibility for non-linear frameworks, 581

Engines (trade publications), 60

— Aircraft. See Aircraft engine

— Diesel (trade publications), 60

— Assembly of (Rolls-Royce), 811

AT range, designed from first principles,

Bedford industrial, glass fibre casings for (W. & J. Tod, Ltd.), 505

Burmeister & Wain, licence agreement with Russia, 264

- Burmeister & Wain 10,400 b.h.p. 6-cylinder, for tanker, 752 - Burmeister & Wain 15,000 b.h.p. 12-cylinder, for tanker Alkaür, 752 - Burmeister & Wain 25,000 b.h.p. 12 cylinder, 752 - Cooling in Stephen School Cooling in Stephen School Cooling in Stephen-Sulzer 15,400 b.h.p.,

Cummins British-built, for Canada, 435
 Diesindicator peak pressure indicator for (Dunedin Engineering Co.), 729

Direct injection, for agricultural, industrial, and marine applications (Perkins), 165

trial, and marine applications (Perkins), 165

— Exhaust of, Smokemeter for, 196

— Fuel injection with DPA distributor pump (CAV Co.), 17

— Glow plug for (KLG), 496

— High-speed, Cushyfoot "S" antivibration mounting for (Metalastik), 485

— Installation with evaporative cooling, for Voice of America (Mirrless Bickerton)

for Voice of America (Mirrlees, Bickerton & Day), 38

- Jenbach two-stroke, comparison of

4-cylinder and single-cylinder, by Prof. S. J. Davies, 404

- Lister Blackstone ERS. 12-T, for Explorer diesel-electric locomotive, 277

- for locomotives, Davey, Paxman, 89

- Long bolt fracture, 96

Long bolt fracture, 96 — Marine, computer calculations for, 720 — Marine, Gardners, for Egypt, 435 — Marine and industrial, AT series (Ruston & Hornsby), 261

Engineering Journal of General Motors, 801

Engine, diesel, marine, running and maintenance (book), by J. Lamb, 554

— Marine (Thornycroft), 697

Engines,

- Maybach (Bristol Siddeley Ltd.), 484

Ltd.), 484

- Monarch range (Mirrlees), 569

- Output of (Burmeister & Wain), 167

- Performance of (report), 95

- Polar Start primer for (MGA), 37

- Progress in industry (report), 95

- Rolls-Royce development and production, 810

Rototherm high-temperature thermometer for (British Rototherm Co.), 486

Ruston & Hornsby, 89

Scavenging in Stephen-Sulzer 15,400 b.h.p., 688

Set, 20 h.p. air-cooled (Coventry Victor),

- Stephen-Sulzer RSAD76, 15,400 b.h.p. two-stroke turbocharged, 688
- Testing of (Rolls-Royce), 811
- Turbo-charged Sulzer, for tanker British Fulmar (Alexander Stephen), 134 Two-stroke 6-cylinder (Crossley Bros.),

Valve seats repair, 96
Vega range of air-cooled (Davey, Paxman), 197

Ventura range of lightweight water-cooled (Davey, Paxman), 197 - Victor Vixen (Coventry Victor), 569 - Working costs of (report), 95
- See also Diesel Engineers and Users;
Locomotive; Marine propulsion
- Gas, nuclear (Oak Ridge), 427, 734
- House foundations at Hawker Aircraft fac-

tory at Squires Gate, 214

Internal-combustion, power increase by induction ramming, by Dr. T. J. Williams,

— Combustion. See also Turbines, gas
Motor-car. See Motor-car engines
Multi-fuel, 600 h.p., "Magic," for Berliet
commercial vehicles, 45
Oil. See Engine, Diesel See Aircraft engine: Motor-car — Petrol.

engine and pumps (trade publications), 28

— and pumps (trade publications), 28
— Reciprocating, induction ramming, by Dr. T. J. Williams, 370
— Overspeed trip for, by R. Malpas and O. P. Woodroffe, 508
— Rocket. See Rocket engines
— Steam, at Birmingham Museum, 380
— Colonial horizontal, Tangyes, 381
— Compound beam, Easton Amos, 381
— Corliss valve, Pollitt and Wigzell, 381
— Reader single-cylinder, 432
— Uniflow, Galloways, 381
Engineer-administrator, place of, in British industry, 385
— Adviser to International Finance Corp., 790
— Architect and, acknowledgment of, by Prof. J. A. L. Matheson, 664
— Collaboration, scholarship study of, 804
— Art and musical interests of, Plain Words on, 322
— Association, British. See British

Association, British. See British
British, handbook 1958 (book), 29
Buyers Guide, 1959 (review), 649
Deficiencies of, questionnaire on, 170
Education of. See Courses; Education;
Training; etc.

Fall in demand for, 449 Guild, investigation into clocking-in by professional engineers, 566; special tie for members, 573; financial advantages of membership of, 573; take-over of Profes-sional Engineers Appointments Bureau, 573

573
Institution of (Australia). See Institution
Junior Institution of. See Junior
Manchester Association of. See Manchester
Professional, Appointments Bureau, 573
— Career booklet, 765
— Income of, 377
— Requirements of, 170
Scientist and, Plain Words on, 418
and Shipbuilders, North East Coast Institution of. See North East Coast
Training of. See Courses; Education;
Training; etc.

Training; etc.

Women as. See Women

Year-Book, Kempe's, 1959, by C. E. Prockter and B. W. Pendred (review), 649

See also Chemical, Civil, Electrical, Mechanical, Production, Structural, etc.

W. Engi urement, Karger and F. H. Bayha (review), 282 Engineering, binding cases, 122; The 1960's Now (supplement), facing 512; request for subscription under special students'

rate, 605 Engineering and Allied Employers' National Federation, Looking at Industrial Relations (booklet), 170; agreement on Payment for Holidays—Manual Workers, 637

Apprentices. See Apprentice Buyers' guide, Northern region, 1958-1959

(review), 310 as career (booklet), 11, 765 Centenaries in 1959, 10

- Centenaries in 1959, 10
- Centre, Birmingham. See Birmingham
- Contracts. See Contracts
- Drawing and drawing office practice, by
P. S. Houghton (book), 61
- First year, by A. C. Parkinson (book), 29
- Education. See Education
- Equipment of the propert 443

Foundation, annual report, 443
Industries Association, Your Retirement (booklet), 299; National Control (or Automation) College project, 693

— Budget effect on, 482

Budget effect on, 482

Employment in. See Employment

Exports, 147

Exports of, position and prospects of, 6

General, position and prospects of, 147

Hours of labour in. See Hours

Position and prospects of, 6, 450, 791

Prospects for 1960, 481; supplement, facing 512

Unemployment in See Hours

Unemployment in. See Unemployment Wages in. See Wages

Engineering laboratories. See Laboratories;
National Engineering; National Physical

— Manpower in Russia, 701

— Manual, by J. H. Perry and R. H. Perry (book), 746

— Marine, Welding and Nuclear Energy Exhibition, exhibits at, 484; atomic energy exhibits, 490; materials at, 503; exhibits at, 533; nuclear ship propulsion exhibits, 545; material exhibits, 555; exhibits at, 569 569

Mechanics applied to, by G. H. Ryder (book), 123

Records, firms', plea for presentation of Newcomen Society, 3
Societies Library, bibliography on shell moulding, 343
Standards, See Privide Standards

Standards. See British Standards Institu-

tion; Standards

— Structures, problems in, by R. J. Ashby and
A. H. Chilver (book), 184

— Systems, analysis, by R. L. Sutherland
(review), 586

Thermodynamics: work and heat transfer, by G. F. C. Rogers and Y. R. Mayhew (review), 442

(review), 442
Union, Amalgamated. See Amalgamated
Western Society of. See Western
Women in. See Women
Engineering Work for Boys (career booklet), 11
See also Chemical, Civil, Electrical, Mechanical, Production, Structural, etc.
English Channel, tunnel under. See Channel Tunnel

Tunnel English Electric Aviation, formation, appoint-

English Electric Aviation, formation, appointments to board and activities of, 103; Lightning aircraft attains Mach 2, 103 English Electric Co., Ltd., welding equipment, 4; project TSR 2 reconnaissance aircraft, 39. See also 2; OR 339 strike aircraft project, 41; formation of English Electric Aviation, 103; bid for turbines in Greer's Ferry hydroelectric project, 129; rejection of bid for turbines for Greer's Ferry hydroelectric project, 171; aircraft electrical equipment with Sundstrand drive and brushless alternator, 296; generator equipelectric project, 171; aircraft electrical equipment with Sundstrand drive and brushless alternator, 296; generator equipment for trawler Falstaff, 375; chairman's annual statement, 423; export prospects, 423; atomic energy activities, 490; Canberra bomber aircraft for Science Museum, 536; 200 MW turbo-alternator for High Marnham power station, 594; TSR2 tactical-strike reconnaissance aircraft, 668; reactor agreement with North American Aviation Inc., 735

Language in India, 169

Law, dictionary of, by Earl Jowitt, 649

Pattern lathes, Eclipse boring tool holders for (James Neill & Co.), 696

Portuguese dictionary, 343

Speaking Union, grant for UK business men to visit US, 299

English Steel Co., Ltd., annual report, 732

as universal technical language, by Dr. E. Holmstrom, 168. See Letter, 195

ENI, oil pipeline from Genoa to Switzerland and Germany, 356

ENIMS, gas bearing work at, 677

Enrico Fermi atomic reactor, comparison of, 334

— Atomic reactor, details of, 336

— Atomic reactor, fuel element for 141

Atomic reactor, details of, 336 Atomic reactor, fuel element for, 141 Award for Prof. E. P. Wigner, 47 Epikote epoxy resin for road surfacing, 587 Epon asphalt concrete for runway, 804

— Epoxy resin for road surfacing, 587

Epoxy resin for road surfacing, 587

Epophen Mould Seal for casting epoxide resins
(Leicester, Lovell & Co.), 183

Epoxide resin casting, Epophen Mould Seal
for (Leicester, Lovell & Co.), 183

Epoxy resin, Araldite, 706

— for road surfacing, 587

— for runway 804

for runway, 804
 Eppstein, J. S., review of Radiation hazards and protection, 377

Epsylon Industries, Ltd., industrial television system, 774 Equations, integral, by F. Smithies (book), 184

Ergonomics, applications of, 365

— Difficulties of application in industry, 365

— Objects and progress of, 489

— Project 335 on, EPA, 365

— Society, 10th anniversary conference (Oxford), 489

Training facilities, 265

— Training facilities, 365
Erman's rolling hatch covers (R. Y. Pickering), 349

Frosion coastal in Isle of Shenney 392 Escalators for Notting Hill Gate underground station, 383

Escape from submerged aircraft, 278
Escher Wyss Ltd., pulverised-coal-fired closed-cycle air turbine at Ravensburg, 63

cycle air turbine at Ravensburg, 63
Escort marine radar (BTH), 407
Essen, Dr. L., Wolfe award, 397
Esso Petroleum Co., Ltd., petrochemicals plant at Fawley, 24; Dracone D1 towed flexible oil cargo vessel, 381; pneumatic hose-handling equipment at Fawley Refinery, 563; Milford Haven project, 700
Esterson, M., review of Electronics of microwave valves, by W. J. Kleen, 184
Ethylene production at Fawley (Esso), 24
Euratom. See European Atomic Energy Community

EUREKA reactor experiment (Vickers), 462-

Eurit, unit trusts of OEEC countries, 355 Europa unit trust, 355 Europa-Valor investment trust, 355, 727 Europak. See International Packaging Exhibition

Europe, coal statistics, ECE, 355 Council of. See Council Eastern, economic position and prospects,

- Industrial output of, 67
- Economic Commission for. See Economic
- Survey of, ECE, 726, 727
- Gas statistics, 630-631
- House, discussion on Britain and European

Economic Association, 791 Investment trusts, 355, 727 — by US, 791

Motorway construction in, 643

Europe, steel production statistics, 419

Unit trusts in, 355, 727 Western, co-operation in, 353

Economic position and prospects in, 726 Economic review of, 289 Industrial growth in, by C. Saunders, 387

— Research in, 499
Europe I investment trust, 727
Europe-Air, proposed combined airlines, 195 Europe-Chemie investment trust, 727
European airlines consortium, 763, 764

— Atomic Energy Community, co-operation of

Atomic Energy Community, co-operation of Britain with, 13; joint research board with USAEC, 13; membership of, 176; agreement with U.K., 176; tariff and quota restrictions under, 176; United Kingdom's relationship with, 225; E. Hirsch appointed president of, 258; standards for radiation protection, 302; general report on activities, 366; constitution of, 366; Supply Agency activities, 366; provisions of agreement with UK, 366; joint programme with US, 366; 2nd general report, 427, 727; research programme, 427; legal status of, by M. Gaudet, 483; proposals for plant projects under agreement with US, 567; US agreement with, 789; atomic energy programme, 789

— Energy Society, membership of, 176
Broadcasting Union, Eurovision television

- Broadcasting Union, Eurovision television programmes, 756
- Coal and Steel Community, comment on 6th annual report, 35; United Kingdom's relationship with, 225; authorisation for Hütten-und-Bergwerke Rheinhausen majority shares in Rochumer Vergin für majority shares in Bochumer Verein für Gussstahlfabrikation, 264; problem of Belgian coal industry, 355

Committee for Construction Equipment, first meeting of, 804
 Common Market, airlines policy of, 195

- Market, British role in, 726
- Market, effect on agricultural machinery industry, 112
- Market, effect on British firms, 787
- Market, effect on British motor industry,

272

— Market, effects of opening of, 791

— Market, effect on tariffs, 126

— Market, investment trusts in, 727

— Market and motor industry, 44

— Market, UK membership of, 731

— Market, US investments in, 791

— Conference for Industrial Management on Industrial Prospects in Nuclear Energy (Stresa), programme for, 492

— Economic Community, 2nd general report, 483; investment projects, 483; Britain as outsider, 791

— Co-operation, Organisation for. See Organisation for

Organisation for
European Helicopters Ltd., Kolibrie twin ramjet helicopter, 88

— Investment Bank, loan to S. Italy Development Fund, 791

Machine Teel Enhibition and for 177

Machine Tool Exhibition, quota for, 177.

See Correction, 312 Nuclear Energy Agency, membership of, 176; comment on activities of, 597. See also Dragon; European Conference for Industrial Management on Industrial Prospects in Nuclear Energy (Stresa);

Halden reactor
Organisation for Nuclear Research, mem-

bership of, 176; proton synchrotron at Mayrin, 771, 772

Productivity Agency, consultant engineering in US (book), 123; Project 335 on ergonomics, 365; report on technical policy 519

Europoort Plan for port of Rotterdam, 62 Eurovision television link, 5th anniversary and organisation of, 756

Eurunion investment trust, 355, 727 Evans, E. Broke, on forecasting as function o management, 512

Evaporative cooling for diesel engine installa-tion for Voice of America (Mirrlees, Bickerton & Day), 38 Eve, I. S., consolidated report on radiation protection, 236

Everite asbestos sheeting (trade publication), 185

Eversafe dissolver at Dounreay, 174 Evode, Ltd., "7 plates, 309 "Twinstik" adhesive for name

Evode weatherproofing process for timber conoid roof, 408 Evolution in man, control of, by Prof. C. D Darlington, 11

Examination guide, elementary telecommunications, by W. T. Perkins (book), 217

— Syllabuses, art and music in, Plain Words on,

Exchange scheme, BISF, 605

— Visits by Russian specialists, 763

Exciters for High Marnham power station, 594

Executives course at Harwell Reactor School, Offices to be more homely, 73
Exhaust, diesel engine, Smokemeter for, 196
Fume emission, research on, 428

Gas, catalytic combustion of, cobalt oxides Jets, rocket, by E. T. B. Smith, 36 Noise, discussion in Parliament on, 392
System, Giesl ejector for steam locomotives, 510

Exhibition, atomic energy, UKAEA, 535
— Industrial Forum—Atom Fair, 395

— Automatic vending machine (London), 325 — British Electronic Component Show, exhibits at, 583

- Trade Fair, Lisbon, 234, 251; note on, 369; Scottish exhibits at, 535; preview of, Brussels, Universal and International, The

Survey (publication), 801

— World Fair, 1958, Philips pavilion at (review), 778

Building, Dexion Ltd., preliminary notice,

Business Efficiency (Olympia), preliminary notice, 659; exhibts at, 698
Canadian National Industrial Production Show (Toronto), 723

Exhibition, careers See National Education
Czechoslovak trade fair, 177
Education. See National Education
Electrical Engineers (London), 326
Engineering, Marine, Welding and Nuclear Energy. See Engineering, Marine, Welding
European Machine Tool, quota for, 177. See Correction, 312
Exchange of UK with Russian, 571
Factory Equipment, exhibits at, 452
Ford May Fair (Manchester), 691
Foundry, Birmingham, exhibits, 721, 722
French, quotas for, 177. See Correction, 312
Geneva International Motor Show, 329
German Industries Fair, note on, 312; description of, 602
Hall of Centre National des Industries et Techniques (Paris), 738
Hanover Fair, note on, 312; description of, 602
"House style." 564

602

"House style," 564

International Instruments, Electronics and Automation (1960), space-selling tour of Europe for, 435

International Samples Fair, 563

— Scientific Research, 84

— Leipzig Fair, note on, 312; comment on, 396; Isotope Developments Ltd. at, 492

Milan Fair, atomic energy exhibits (UKAEA), 492

National Boat Show, 86

National Education. See National Education

Packaging (Amsterdam), 369 Physical Society, 102 Radioistopes, UKAEA, 535

Road, 190 — Town, 45

Russian, exchange with UK, 571 Stone, J., & Co. (Deptford), Ltd., 134 Teenagers Fair (Blackpool), 563 Town road, 45 Urban road schemes, 45

Exolit liquid fire retardant (Exsud), 780

Expaflex chlorinated rubber coatings (trade publication), 650

Expandit Ltd., Expafelx chlorinated rubber protective coatings (trade publication), 650

Expansion bearing for bridges, Neoprene for, 543

Expansion to the publication of the pub

Experts, views of, Plain Words on, 354

Experts, views of, Plain Words on, 334

Explorer diesel-electric mixed-traffic locomotive, 276

— I satellite, summary of details of, 615

— II satellite, summary of details of, 615

— IV satellite, summary of details of, 615

— V satellite, summary of details of, 615 Explosions, atomic. See Atomic

Explosions, atoline. See Aloma Explosives (trade publication), 283 — High, science of, by M. A. Cook (review), 28 — Situations, lighting in (IES report) (book),

Export achievements of C. A. Parsons, 135

— Agricultural machinery, 111-112

— Aircraft, 40-41, 563

— Credit extension for, 163

— Industry, for 1958, 2

Avoiding trouble in selling, by R. Joscelene, 457

Polity 103

- Boilers, 402

Boiler, 402
Books, discussion in Parliament on, 458
Cables, 146-147
to Canada, discussion in Parliament on, 635
to China, 98

Conjinearing and contracting plant, 148
Coal, position of, 144
Competition from foreign markets, 596
Co-operation in, by British firms, 595
Copper to China, discussion in Parliament on, 493
Control of Norway Norwegian export

Copper to China, discussion in Parliament on, 493
Council of Norway, Norwegian export directory, 1958-59 (review), 649
Credits Guarantee Department, increase in business covered by, 163; extension o facilities offered by, 695
Czechoslovak, FT Magazine on, 369
Directory, Norwegian, 1958-59 (review), 649
to dollar area, increase in, 595
Electrical appliances, 146
Equipment, 146
Machinery, 146
Plant, 146
Engineering industry's, position and prospects of, 6
General engineering industry, 147
German (W.), 290
Guide to, FBI survey, 631
Locomotives 78
Machine tools, 111
Market position and prospects, 251, 595
Motor cars, Japuar, 177

Machine tools, 111
Market position and prospects, 251, 595
Motor cars, Jaguar, 177
— Car, Market changes, 488
— Cars, to North America, 103

- Cars, to North America, 103
- Vehicle, 43
- to North America, 723
- Periodicals, discussion in Parliament on, 458
- to Portugal, 234
- Position and prospects of, 692, 758
- and prospects of, by Sir K Hague, 659
- Rolling stock, 78
- to Russia increase in, 755

to Russia, increase in, 755
Russian, publications on, 369
Soviet, quarterly advertising review, 369
Textile machinery, 76
Tractors, 111-112

Trade facilities, survey of (booklet), 631 to US, discussion in Parliament on, 493

— Position and prospects of, 692
Victor motor car, to North America, 103
Wires, 146-147

Wires, 146-147
 Wood, world statistics, 183
 Exsud Engineering, Ltd., Exolit liquid fire retardant, 780
 Extractor pump for gravimetric flue-gas sampling apparatus, 287
 Ridge line, for ventilation (Greenwood's & Airvac), 665

— Tool for gland packings, free offer of (Crane Packing), 312

Extragalactic radio noise sources, 744

Extrusion of beryllium tube (Chesterfield Tube),

Eye shields (trade publication), 216

### F

FABIAN Society, What Shall we do about the Roads? (pamphlet), 323
Faceplate with wire-race ball bearing, 339
Factory accidents. See Accidents
— Acts, railway running shed included in, 535
— Washing facilities in, 535
— Architecture in, at Kitt Green (Heinz), 576
— Bill, new clauses in, discussion in Parliament on, 535

Pail See Service Service and performance Building, requirements and performance, 354

354
Cleaning machines, trends in, 524
Design, architect's role in, 565, 576
Equipment Exhibition, exhibits at, 452
Multi-storey, design of (booklet), 354
New, for John Mackintosh, 525
— for Langstone, Portsmouth, discussion in Parliament on, 493
Plans approved for new, statistics, 530
Ship, whaling, atomic-propelled, proposal for, 548
Sites, information on, 763

- 101, 346

Sites, information on, 763

of Texas Instruments at Dallas (Texas) (trade publication), 586

Visits, Industrial Travel organisation for, 235

Fail-safe structure for Argosy aircraft, 74, 75

— Tests on Boeing 707 jet airliners, 623

Failure of cast iron cylinders and prisms in compression, 799

— of sandstone cylinders and prisms in compression, 799

— Service, of structural components, by I. J. Somervaille, 806

Fair, trade. See Exhibition

Faires, V. M., thermodynamics of heat power (review), 217

Fairey Air Surveys Ltd. CEGR "Operation

(review), 217

Fairey Air Surveys Ltd., CEGB "Operation Chimney Plume," 30; anti-vibration mountings for camera installations on jet aircraft, 372; vibration isolator unit for camera in jet aircraft, 372; anti-vibration mounting for airboru electronic measuring instrument, 372; mountings for standard electronic equipment in aircraft, 373; laboratory vibration analyser, 373; test rig for applying horizontal, vertical and angular vibration modes on anti-vibration mountings, 373; photo-transistor directreading displacement meter for vibration analysis, 522

Fairey Aviation Co., Ltd., world class speed

Fairey Aviation Co., Ltd., world class speed record for Rotodyne airliner, 103; US orders for Rotodyne airliner, 328; core skirt for Dounreay fast breeder reactor,

366
Fairey Gannet early warning aircraft, Spraymat de-icing system for, 749
Fairfield Shipbuilding & Engineering Co., Ltd., double-reduction gear unit for ore carrier Morar, 349; agreement with Mitchell Engineering Ltd. for marine nuclear energy development, 546; brochure on activities of 572; See also Mitchell Engineering Ltd. (consortium)

Faiveley pantograph for railway electrification

572; See also Mitchell Engineering Ltd. (consortium)

Faiveley pantograph for railway electrification (J. Stone), 134

Falstaff, diesel-electric trawler, 375

Fan, electric, single backward curved for dualduct high-velocity air conditioning system at Brightside Heating & Engineering Co., Ltd., 159

F.A.O. Yearbook of Forest Products Statistics, 183

Fararc 200 portable heavy duty arc welder (Portable Welders, Ltd.), 37

Farina, Dr. G., styling studio for motor car manufacturers, 708

Farina, P., MG Magnette motor car body, 171; Morris Oxford Series V body shell, 464; Riley 4/68 1½ litre motor car body, 612

Farmer, F. R., consolidated report on reactor safety, 237

Farming. See Agriculture: Irrigation; National Power Farming Conference; Tractors

Farnell Instruments Ltd., fuel consumption test equipment for Leyland Motors Ltd., 200

Farr, P. J., review of Business Enterprise: Its Growth and Organisation, by R. S. Edwards and H. Townsend, 28

Farrow & Jackson, Ltd., soft-drink vending machines, 267; Mercian fungicidal wallpaint, 379

Fatigue failures of connecting rods of frame saws under corrosion, by J. Salokangas

Fatigue failures of connecting rods of frame

saws under corrosion, by J. Salokangas

saws under corrosion, by J. Salokangas (book), 586
Limit, effect of Sulfinuz treatment on, 120
Reduction, elbow board for, at British Typewriters, Ltd., 319
In structures, DSIR committee on, 739
Tests on Argosy aircraft structure, 74
Pulsator for, 434
Teeting prochime, Amster, 500, tons, for

Testing machine, Amsler 500 tons, for Secretaria de Comunicaciones y Obras Publicas, 433

Fawley petrochemicals plants, 24

- Refinery, pneumatic hose-handling equipment, 563

BI. See Federation of British Industries

Federal Trust for Education and Research, report on UK and European Economic Community tariffs, 290
Federation of British Industries, recommenda-

leration of British Industries, recommenda-tions for budget, 162; views on road construction programme extension, 195; register of British manufacturers, 1959 (review), 310; 4th industrial trends survey, 451; election of W. H. McFadzean as president, 488; retirement of D. L. Walker as secretary, 488; staff changes, 488; annual report, 536; overseas scholars scheme, 537; comment on Budget by W. F. McFadzean, 599; Survey of Export Trade Facilities (booklet), 631

Federation of Civil Engineering Contractors
Handbook 1958-59 (book), 93; list of
models and films, 280; Safety Guide, 408;
remarks on road construction capacity,
by R. M' Douglas, 671

of Commonwealth Motoring Associations
and Clubs, proposed formation of, 544

Feed mechanism automatic electronic for

Feed mechanism, automatic electronic, for roll-grinding machines (Churchill), 127

— Pneumatic slide, Besco, for power presses (F. J. Edwards, Ltd.), 295

— Water. See Water

(F. J. Edwards, Ltd.), 295
Water. See Water
Feedback controls, linear, analytical design of, by G. C. Newton, Jr., L. A. Gould, and J. F. Kaiser (review), 252
— Systems, by O. J. M. Smith (review), 252
— Servo components (trade publication), 650
— Theory and its applications, by P. H. Hammond (review), 252
Felici electrostatic high-voltage d.g. generators

Felici electrostatic high-voltage d.c. generator, 466

Felici electrostatic high-voltage d.c. generator, 466

Fellows, J. R., on air conditioning and refrigeration (book), 154

Fellowship in traffic engineering, 643

— Whitworth, increase in value of, 566

— Modification in rules of, 566

Felt reinforcement for plastics bearings, 27

Fender, Rubber sandwich, Raykin Fender (Andre), 504

Ferguson Pailin Ltd., air-insulated metal-clad switchgear, 327

Fermi level in superconductivity, 465

Ferodo Ltd., MW48 asbestos friction material for oil well drawworks, 780

Ferranti Ltd., programmes for Mercury computer, 53; PCTC transistorised digital computer, 87; computer library service, 132; manufacture of klystrons under licence by Raytheon Corp., 135; transformer production statistics, 231; flame-cutting machine with computer control, for ships' plates, 485; ceramic oscillator/amplifier valve UL11, 583; Perseus computer (trade publication), 650; valves (trade publication), 650; Sirius computer, 696

Ferret floor cleaning machine (British Vacuum

(trade publication), 606, 696
Ferret floor cleaning machine (British Vacuum Cleaner & Engineering Co., Ltd.), 256
Ferro Enamels Co., Ltd., vitreous-enamelled torus for Zeta, 205; vitreous enamel for aluminium, 587
Ferromagnetic materials, portable crack detec-

aluminium, 587
Ferromagnetic materials, portable crack detector for (Fraser-Smith), 600
Fertile media for LMFR power reactor, 314
Fertiliser plant of ICI, rotary driers for (Head Wrightson), 589
Festival of Films in Service of Industry (Harrogate), 598, 627
Fettling bench with built-in dust extraction equipment (Newton Collins), 722
Fi-Cord Ltd., miniature battery tape recorder, 454

Fiat 1,800 and 2,000 c.c. motor cars, 329
Fibres, portable X-ray equipment for (Marconi Instruments), 533

Synthetic, production in UK, 748

cep model Beton portable bar shearing machine (Thos. W. Ward), 293

— Colt shearing machine (Thos. W. Ward), 203

Pidela automatic fire alarm (Associated Fire Alarms Ltd.), 32
FIDO fog dispersal system, 392
— at London Airport, 763
Field, H. W., & Son, Ltd., Fildenex plastics lampshades, 596
Fielden Electronics Ltd., Pneutronic level controller (trade publication), 618
Fierro Esponja SA, Hyl process of direct reduction of iron ore into sponge iron, 159
Figures for electronic reading machines (EMI Electronics), 218
Fiji, Port, fire fighting vessel Dautataro, 622
Fildenex plastics lampshades, 596
File, hand shaper (Stanley), 64
Filing machine, Limax (South Coast Engineering Co.), 760
Film, cinema, AEI training courses, 756
— Atomic energy, at Engineering Exhibition, 490
— Disc brakes (Dunlop Rubber Co.), 368
— Electricity agreesting industry, AEI, 756

tion, 490

Disc brakes (Dunlop Rubber Co.), 368

Electricity generating industry, AEI, 756

Film News (G.B.), 585

Harrogate Festival, 598, 627

for hire, catalogue of (Rank), 812

History of radio, 142

Industrial research and, DSIR conference, 763

Library catalogue 1958-59 (Shell-Mex),

93

Milford Haven project, 700

Schlieren, award for, 598

for schools, etc., list of, 280

Sponsored, from commerce and industry (booklet), 713

"Tour of the Works" (Thomas Firth & John Brown), 587

John Brown), 587

in Training Within Industry for Super-

visors scheme, 382

Visual Aids Information and Advisory
Service, activities of, 131

n Cooling Towers (1925), Ltd., cooling
towers (trade publication), 155; glass fibre

towers (trade publication), 155; glass fibre packaged cooling tower, 601

— Gas. See Gas

— Oil. See Oil
Film Producers' Guild, cinema film on disc brakes, 368

Filter, air, for pressurised assembly cabinets, 415

415

— Super-Vee (Vokes), 760

— Throw-away, Ozotex (Ozonair), 381

— for aircraft fuels, Shell research on, 647

— Fuel, Wipac Filter-Link, 45

— Glass fibre and Terylene (IC1), 620

— Magnetic, for David Brown 950 tractor, 406

— Mancuna-Fumex (Mancuna Engineering),

- Mancuna-Mister (Mancuna Engineering),

620
Micro, Shell research on, 647
Multi-purpose, with throw-away cartrideg (Menrow Ltd.), 533
Oil, are they necessary? by G. Wilkins, 544.
Tests on (Shell Research), 647

Filter unit for flue-gas sampling, 286
Filtration, Kieselguhr for (Charles H. Windschuegl Ltd.), 683
Filtration & Valves, Ltd., valves and strainers (trade publication), 443
Fimex magnetic chucks (Darwins), 697
Finance Bill amendment of dry docks rejected, 695

Finance Corp., International. See International

Finance Corp., International. See International
Financial policy of UK in US, 535
Finish, surface, Diavite Microtester for (H
Hediger), 352
— for granite, Thermal-Texturing (Union Carbide), 284
Finishing of castings, equipment for, at Foundry Exhibition, 722
— of magnet sector plates, 755
— Metal, technical service (Canning), 509
Finland, atomic energy programme, 12
— Plain Words on, 530
Fire alarm, automatic, Fidela (Associated Fire Alarms Ltd.), 32
— Engine, Firemaster (Leyland), 265
— Extinguisher for the home (Pyrene Co.), 480
— Hose reel foam (Pyrene Co.), 534
— Pyromet dry chemical (Pyrene Co.), 534
— Extinguishing plant, CO<sub>2</sub>, for BOAC test bed at Nantgarw, 95
— Fighting vessel, Dautataro, for Port Fiji, 622
— Hazard bulletin 501
— Hoses (trade publication) 283
— Oil, compressed air for extinguishing, 620
— Open convector, 660
— Precautions at CIBA (ARL) Ltd. new buildings, 706
— Proofing (trade publication), 216
— Protection (trade publication), 216
— Association, fire hazard bulletin, 501
— Equipment in test plant of BEA for Rolls-Royce Dart turboprop aircraft engines, 224
— of structures by asbestos and asbestos cement (booklet), 804
— of radioactive materials, bulletins on, 395
— Resistance of prestressed concrete beams and floors, 763
— Retardant, liquid, Exolit (Exsud), 780
Firemaster fire engine (Leyland), 265
Firms' histories, plea for presentation to Newcomen Society, 3
First Atomic Power Industrial Group, atomic reactor consortium, 303
— Federal Savings and Loan Association, office building with aluminium curtain wall, 804
Firth Cleveland Steel Strip, Ltd., strip and wire (trade publication). 283
Firth, Thomas, & John Brown Ltd., cinema

office building with aluminium curtain wall, 804

Firth Cleveland Steel Strip, Ltd., strip and wire (trade publication). 283

Firth, Thomas, & John Brown Ltd., cinema film "Tour of the Works," 587

Fish-finding equipment on trawler Fulstaff, 375

— Trawling unit (MacGregor International & Robertsons (Fleetwood)), 781

Fisher, J. M., on research into road construction, 671

Fisher & Ludlow Ltd., Flowlink pendulum conveyor, 721

Fishermen's cooperatives, recommendation for development of, 790

Fishery Cooperatives, Technical Meeting on, 790

Fishing gear, modern, of the world, by H.

Fishing gear, modern, of the world, by H. Kristjonsson (book), 650

— Industry, mechanisation of, 790

Fitch, W. K., on Dravo Corp., 572

Fitting the job to the worker (book), 746;

EPA conference, 365

Fitzgerald, F. on rocket propellents, 279

EPA conference, 365
Fitzgerald, F., on rocket propellents, 279
Fitzmaurice-Kelly, S., on Instrument Inquiry Service, 451
Fitzpatrick & Son (Contractors) Ltd., Doncaster by-pass, 579; London-Birmingham motorway, 776
Fixture and jig details and units, by H. W. Hardy (book), 475
FJE machine hire plan, 631
Flags of convenience in shipping industry, 766
— Discrimination in shipping industry, 766
Flagship platform trucks (Angel Truck Co.), 762
Flame photometer for analysis in boiler house.

Flame photometer for analysis in boiler house,

64
— Plating of aluminium allov pulleys for wiredrawing machine, 59. See Letter, 419
— Resistance, British Standards work on, 201
Flameproof rotary vibrators (Blending Machine Co., Ltd.), 420
Flaminia 2½ litre motor car (Lancia), 329
Flammable situations, lighting in (IES report) (book), 93
Flash distillation plant, Aquaflash, for sea water (Buckley & Taylor, Ltd.), 229
Flats and Houses, 1958 (layout in residential development schemes), 64
— Layout in residential development schemes, 64

64
Modern, by F. R. S. Yorke and F. Gibberd (review), 778
Multistorey, walls for (Wates Ltd.), 525
Noise in, DSIR report on, 192
Off-peak floor heating in, 592
Flattle lift truck (Eccles), 728

Flattie lift truck (Eccles), 728
Flaw detection in honeycomb composite panels (Martin Co.), 284

— Ultrasonic. See Ultrasonic
— detector, ultrasonic. See Ultrasonic
Fleck, Sir A., appointment as president of Industrial Co-Partnership Association, 331
Fleming Safety Equipment, goggle cleaning and de-misting cabinet, 166; eye shields (trade publication), 216
Flight Log chart in "Operation Chimney Plume" (Decca), 30

— Operation calculations, Bristol team's study on, 787

Operation calculations, Bristol team's study on, 787
Space, by C. C. Adams (book), 61
Testing of aircraft, transistors for, 742
Flint, D., on analysis of coal ash, 64
Flip-flop, basic and complete, cryotrons, 550
Float glass. See Glass
Floating dock. See Dock
Flood defences, closing breaches in, by M. Nixon, 609
Floodgate Steel Fabricating Co., Ltd., automatic mould closing machine, 722

Floor beam section determination by Pegasus computer, 18

Cleaning and drying machines (British Vacuum Cleaner & Engineering Co., Ltd.), - Machines (Cimex-Fraser Tuson Ltd.),

452
Concrete, Glocrete SR coating for (Corrosion Ltd.), 747
Heating, off-peak, fallacies of, by H. H. Bruce, 592. See Letter, 663
Pavoir at Heinz factory at Kitt Green (Acalor), 578
Polyvinyl chloride sheet for clean rooms, 415
Point and the properties of the prop

Reinforced concrete slab, at Heinz factory at Kitt Green, 578

at Kitt Green, 578

— Warming, electric, 192

Flooring, slab, British Standard on, 611

— Tile, British Standard on, 611

Florida West Coast Nuclear Group, heavywater gas-cooled reactor research project, 425

Floride motor car (Renault), 708 Flour mill at Barnes Milling, Ltd., 156

Flow, air, in straight ducts and pipes, friction charts for, by R. H. Young and J. M. Gasiorek (book), 746

— Control valve, design of, 749

— over delta wings at low speeds with leading edge separation, by D. J. Marsden, R. W. Simpson and W. J. Rainbird (book), 311

— Evact, behind a vawed conical shock by

Exact, behind a yawed conical shock, by
G. Radhakrishnan (book), 311
Fluid, thermodynamics of, by N. A. Hall (review), 585

— Heat, in brake drums, by T. P. Newcomb, 709

— Hypersonic. See Hypersonic Flow Symposium

— Indicators, sight (Rhodes), 569

— Meter. See Meter

— from pipe manifolds, analysis of, by Dr.
E. Markland, 150

Supersonic, unsteady, potential theory of, by J. W. Miles (review), 681
 Water in channels and pipes, formulae in graphical form for, 473
 Measurement of large, National Engineering Laboratory report on, 643

- Speed and direction of, meter for (Kelvin Hughes), 70

Flowline production at printing factory of Perivan Group, 690
Flowlink pendulum conveyor (Fisher & Ludlow), 721

Flue gases, dust in, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285 Grit in, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285

Fluid flow, thermodynamics of, by N. A. Hall (review), 585 Mechanics textbook, by J. R. D. Francis (book), 61

- Processing at elastomers research laboratory of Du Pont Co. (United Kingdom) Ltd.,

Fluke, John, Manufacturing Co., differential voltmeter, 390

Fluon ptfe material for flexible hoses (ICI), 780

— Price reduction, 692
Fluorescent lamps fittings. See Lamp fittings

Lighting. See Lighting

Fluorine and fluorine compounds, Wiggin nickel alloys v., 343

— Rocket fuel, 279

Fluorine fluorescent large fittings. Teak

Flurolier fluorescent lamp fittings, Task-master range of, 198

Flyover, Barking, completion of, 670

— Tilbury, construction of, 670

Foam, detergent, for clearing gas wells, 747

— River contamination by, 747

— Fire extinguisher, hose reel (Pyrene Co.), 534

Liesthene rigid (ICI), 556

— Urethane rigid (ICI), 556
Foamed glass insulation, Stay-Dry, for piping (Pittsburg Corning Corp.), 183

Foamsill foamed glass, properties and applications of (Pittsburg Corning Corp.), 379
Fog, aircraft landing in, 763

— Dispersal experiments at Battersea College

of Technology, 428

— FIDO system, 392, 763

— Pollution by, 350

— Tests on chimney plumes by CEGB-Fairey, 30. See LETTER, 99

Foil guillotines, Giant (Furnival), 808

olsom, Dr., on new curriculum methods study at Rensselaer Polytechnic Institute, 66
Fomescol emulsion breaking agent for reducing

sea pollution (Glovers (Chemicals) Ltd.), 747 Food and Agriculture Organisation, Technical

Food and Agriculture Organisation, Technical Meeting on Fishery Cooperatives, 790
Canned, production at Heinz factory at Kitt Green, 576; sterilisation at Kitt Green factory of H. J. Heinz, 782
Hot, vending machines. 325
Industry, productivity in, by M. Bogod, 690
Foote Bros. Gear & Machine Corp., David Brown Corp. proposal to purchase interest in, 536

Ford Instrument Co., tanker powered by gas-cooled reactor, 547

Ford May Fair (Manchester), 691

Ford May Fair (Manchester), 691

Ford Motor Co., Ltd., high output statistics, 135; new projects, 135; restyling of Consul, Zephyr and Zodiac motor cars, 265 "closed shop" disputes, 299; Escort as AA breakdown vehicles for Preston Bypass, 393; review of operating conditions, 488; staff planning, 517

Ford Motor Co. (US), "704" gas turbine for motor cars and lorries, 676; 705 gas turbine motor car engine scheduled for testing, 772

Fordath Engineering Co., Ltd., shell moulding and casting machine, 722
Forecasting by economic analysis, 528

 as function of management, by E. Broke Evans, 512 Foreign Investment Incentive Tax Bill, 724

Foremen, conference with shop stewards, Industrial Welfare Society, 105

Forest Products Research Laboratory, annual report, 772

Statistics yearbook, 183

Forging, training in Sheffield, BISF scheme, 537 Fork-lift truck. See *Truck* Forming machines, strip, Heenan manual on

Forming machines, strip, Heenan manual on (book), 92

— Wire, Heenan manual on (book), 92

— Spray, of high-temperature materials, 652
Formula E tannating process, 555
Forth, E., appointed chief generating engineer, North Eastern Division, CEGB, 105
Fortrex welding electrodes (Murex), 556
Foster Instrument Co., Ltd., test rig for graphite blocks for reactors, 47
Foster Wheeler Ltd., direct heating of fuel oil, 191; pneumatic hose-handling equipment at Fawley Refinery 563; atomic submarine land-based project at Dounreay, 675. See also Vickers Nuclear Engineering Ltd.
Foundations, air compressor, at Hawker Air-Foundations, air compressor, at Hawker Air-

craft factory at Squires Gate, 214
Caisson, for stamp shop at Hawker Aircraft factory at Squires Gate, 214
Dampers, Lockheed, for stamp shop at Hawker Aircraft factory at Squires Gate, 214

Engine house, at Hawker Aircraft factory at Squires Gate, 214
Iron and steel works buildings, by W. S. Atkins, 220
Machine, at Hawker Aircraft San

Machine, at Hawker Aircrast factory at Squires Gate, 212 Foundry dust extraction equipment, 721 — Exhibition, Birmingham, exhibits at, 721,

- Industry, iron, position and prospects of, Non-ferrous, committee on conditions in, 635

Foundry Plant & Machinery Ltd., Servo-slinger sandslinger, 722 Foundry Suppliers Ltd., moulding sand testing equipment, 722

- Trades' Equipment & Supplies Association Foundry Exhibition (Birmingham), 721, 722 - See also Castings; Moulding Fountain, R. S., on composite construction in steel and concrete for bridges and buildings

Foxboro-Yoxall Ltd., magnetic flow meter, 524 Fracture of diesel engine components, 96

Frames, multi-storey, work of Building Research Station on, 62

— Plastic, behaviour of, 275

— Portal, Heycon, for helicopter hangar, 579

— Rigid, formulas, by A. Kleinlogel (book),

- Statically determinate, 276
- Strain-hardening materials, 276
- Structural, analysis by electronic computer, by Dr. E. Lightfoot and F. Sawko, 18
Framed structures, limit design of, by Dr. J. Heyman, 275
Frameworks, braced, non-linear, virtual work

and complementary energy applied to, by Prof. J. A. L. Matheson, 581 Buildings for iron and steel works in France,

by A. Delcamp, 221 Grid, analysis of, by A. W. Hendry and L. G. Jaeger (book), 154 Resolved by generalised slope-deflection, France, aircraft industry difficulties in, 163

- Common voltage range, 195
- Communism in, 162
- Electricity supply industry, 195
- Framework of iron and steel works buildings, by A. Delcamp, 221
- Hydro-electric power in, 195
- Motor industry, 796

Motor industry, 796
See also French
Francis, J. R. D., textbook of fluid mechanics

(book), 61 Francis turbine. See Turbine, hydraulic

Frank, W. F., on legal aspects of commerce and industry (review), 376
Franki Pile Co., reinforced concrete founda-

tions for Heinz factory at Kitt Green, 577
Franklin, Benjamin. See Benjamin Franklin
medal

Franklin, G. F., sampled-data control systems (review), 617
Franklin Institute (Philadelphia, Pa.), Ten Steps into Space, note on, 155
Fraser & Fraser Ltd., coal or oil fired radiant heat hot water boiler, 570
Fraser, W. J., & Co., Ltd., caesium recovery

from radioactive wastes, 394 Fraser, W. L. on Babcock & Wilcox, 668

Fraser-Smith, R. F., portable crack detector for ferromagnetic materials, 600 FRED electronic reading machine (EMI Electronics), 218

Free-cutting alloy, Kynal 11S, 555
Free Piston Engine Co., Ltd., GS34 Pescara gasifiers for ore carrier *Morar*, 349 Gas-turbine engines for ore carrier Morar 349

— Gasifiers. See Gasifiers — Trade Area Britain's views on, 458 Area, failure in negotiations on, 597 Area, Little, comment on, 725 Area, Little, member countries for, 758

Area, Little, progress of, 758
Area, negotiations on, Blue Book on, 194
Area negotiations, by M. Camps, 726
Area, negotiations on, White Paper on,

Area, position and prospects of, 194

Freeman, Fox & Partners, Beyer-Garratt steam

locomotives for Rhodesia Railways, 52; Auckland Harbour Bridge, 739 Freeman, Taylor Machines Ltd., competition for inventions, 457 Freight lift for aircraft (Short Bros. & Harland),

French, A. P., principles of modern physics (review), 502

— Fairs and exhibitions, quotas for, 177. See

Correction, 312 Industry, directory of, 1959 (review), 649 Railways, passenger-carrying railcar for (Renault), 471; new Paris-Lille express train service with radio telephone, 758 French, W. C., & Co., Ltd., BOAC test bed at Nantgarw, 95; London heliport, 543; Barking flyover, 670 — See also France

See also France
Friction charts for air flow in straight ducts and pipes, by R. H. Young and J. M. Gasiorek (book), 746
Coefficient, effect of Sulfinuz treatment on mild steel, 119
and lubrication of solids, by F. P. Bowden and D. Tabor (book), 746
Manifold with, examples of, 151
Material, asbestos, MW48, for oil well drawworks (Ferodo Ltd.), 780
Properties of reinforced plastics bearings, 27

 Properties of reinforced plastics bearings, 27
 between tyre and road, by Dr. D. Tabor. See Letter, 631

Friendship F.27 passenger aircraft, under-carriages for (Dowty Equipment Ltd.), 505 Frigate Ashanti, with steam plus gas turbine, 434

Boiler room accident in, 605 — Gear case, Perspex model of, 786

Frontloader 59 shovel loader (Merton Engineering), 632

Frost damage to motorways, 171

— Protection of crops by irrigation equipment (Wright Rain), 705

Frost, T. P., appointed chief test pilot of Bristol Siddeley Engines, 573 Fruton, J. S., general biochemistry (review), 411

Fry & Cowell (Pindisports) Ltd., camping equipment, 224 FT Magazine on Czechoslovak foreign trade,

Fuel, aircraft, automatic monitor for, 647

— Purity of, Shell research on, 647

— Water contamination, 647 Consumption test equipment at Leyland Motors Ltd., 200

Efficiency Service, National Industrial. See National Industrial Efficient use of (review), 410

Element, atomic. See Atomic - Injector with distributor pump (CAV Co.),

Fuel & Metallurgical Processes Ltd., hot blast equipment, 722

— Oil. See Oil fuel Off. See On Jue!
Policy, Government's discussion in Parliament on, 201
Pump. See Pump
Rocket, 279

Smokeless, from coal by low-temperature carbonisation, 428

— Discussion in Parliament on, 234

— Warmoo, 234 Solid, appliances, approved distributors of, 660

Tanks in Martin aircraft, nitrous oxide gas for tracing leaks in, 659 — See also under specific types of fuel Fuelling, aircraft, hydrant system, 648

— Static electricity in 648
— Jet airliners, Shell research on, 647
Fulgar "dream" motor car (Simca), 200 Full-load efficiency testing of turbine reduction gear units, 306 Fuller, R. Buckminster, geodesic dome, 473

Fullers Earth Union Ltd., Fullbond bonding material, 722

Fumes (trade publication), 283

— Exhaust, research on, 428

— Extraction plant in test plant of BEA for Rolls-Royce Dart turboprop aircraft engines, 224

Funaro, B., parking (review), 777 Funaro, B., parking (review), 777

Functional tradition in early industrial buildings, by J. M. Richards (review), 777

Furnaces, annealing and brazing, Hump-back (Birlec), 484

— Continuous flash, at Aluminium Corp.

(Royce Electric Furnaces), 633

— Blast. Russian practice, 797

— Boiler, dust and grit emission, measurement of (BCURA), 613

— See also Stoker

— Crucible (Morgan Crucible Co.), 722

Electric arc, pre-refining of hot metal for (Brymbo), 657
— (Birlec-Efco), 722

Equipment for annealing pearlitic mal-leable iron castings at Ley's Malleable Casting Co., Ltd., 245 High-frequency, for stainless steel pro-

duction (Spartan Steel & Alloys, Ltd.), 58 Gas-fired (trade publication), 443

- Glass-melting tank, by R. Gunther (book), Heat treatment, at Birlec's Aldridge works,

Hump-back, for annealing and brazing (Birlec), 484

Induction high frequency, for sintering beryllium powder, 414
Mesh-belt conveyor (Birlec), 556

— Open-hearth, magnesite-chromite roofs, 797 — Hearth, Russian practice, 797 — Reheating, for Brinsworth Mill (Stein & Atkinson), 22 Resistance, platinum wound, for sintering beryllium powder, 414

Shaker hearth (Hedin, Ltd.), 293
Sintering, for beryllium powder, 414
Slags textbook by W. Gumz, H. Kirsch and M-T. Mackowsky (review), 554
Vacuum, consumable-arc (W. C. Heraeus), 626

- Induction (Wild-Barfield-NRC), 627 for sintering beryllium powder, 414 Small general-purpose (GEC). 532

— See also *Cupola* 

Furniture, cabinet, design manual for, comment on book, 96 Development Council, Design Manual for Cabinet Furniture, comment on book, 96
Furnival & Co., Ltd., Giant guillotines for paper, foil, or hardboard, 808
Fused silica for spectrophotometer prism, 59

Fuselage, semi-monocoque, for Vanguard airliner, 15 Future Growth of World Population (book), 331

G

G2 atomic reactor, electricity for grid from, 575 Gabor, Prof. D., inventor of NRDC flat television tube, 128

vision tube, 128
Galactic radio noise sources, 744
Galbraith Committee, marine nuclear reactor systems submitted to, 792
Galloways Ltd., uniflow steam engine, 381
Gamma spectrometry. See Spectrometry
Gannet early warning aircraft, Spraymat deicing system for, 749
Gantry crane. See Crane
— Rail maintenance, by D. B. Wilson, 220
Gardner, F. W., on C. A. Parsons, 668
Gardners. contract for marine diesel engines for Egypt, 435

Egypt, 435
Garment Workers' Union, Ladies, International. See International Ladies' Garment
Gas bearing. See Bearing

- Blast furnace, production, consumption and sale statistics, 631

- Scottish. See Scottish

West Midlands. See West Midlands

Constant Statistics, 631

- Board Co-operation with Electricity Boards,
Weir Committee report on, 511

- North Thames. See North Thames

- Scottish. See Scottish

- West Midlands. See West Midlands

Gas Board Gas Board
Circulator for Berkeley atomic power station, 269. See Correction, 395
Conversion of coal into (BCURA), 613
Council, interest in British Methane, 232
Density, calculation in flue-gas sampling, 287

Drainage at collieries, 779
Dynamics, fundamentals of. Vol. III, by H. W. Emmons (review), 713

Electron, in metal, 465 Exhaust. See Exhaust

Election, In Inelar, 405
Exhaust. See Exhaust
Film bearing, shaft stability in, by V. H. Brix, 178
Flue, dust in, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285
Grit in, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285
Industry, ECE study on problems of, 659
Position and prospects of, 630-631
US, natural gas impact on, 232
Liquefaction plans in Venezuela and Mexico, 663
Liquefied, imports of, discussion in Parliament on, 392
See also Methane; Natural gas
Liquefying machine for cooling systems, Philips type PW7000 (Research & Control Instruments, Ltd.), 697
Liquor disposal in River Trent in Stoke area, 672
Staipless steel road tanker for, 748

area, 672 Stainless steel road tanker for, 748 - Main, boring for Hyde Park road improve-

ment, 611

— Natural. See Natural gas

— Nitrous oxide, for tracing leaks in Martin aircraft fuel tanks, 659 Scrubbers (trade publication), 474 Statistics for Europe, 630-631Turbine. See *Turbine* 

Velocity, calculation in flue-gas sampling, Water, carburetted, equipment for Walsall Gas Works (Humphreys & Glasgow), 594
Wells, detergent foam for clearing, 747
Works. See Gasworks

See also under specific gases Gascoyne, J., analysis of pipe structures for flexibility (book), 746

plans, 663
Gasification of coal, discussion in Parliament on, 201

— New type plant for, 731

— Lurgi, Bischoff tower purifiers for desul-

Gases Licuados Constock, gas liquefaction

phurisation in, 588

pnurisation in, 588
Gasifier, free-piston, development of, 521
— Piston, GS34 Pescara (Alexander Stephen), 134
— Piston GS34 Pescara, for ore carrier Morar (Free Piston Engine Co.), 349
— Piston, GS34, for turbine-driven compressor plant (National Gas & Oil Engine Co., Ltd.), 49
— Slagging, experimental (BCURA), 613

Slagging, experimental (BCURA), 613
 Gasiorek, J. M., friction charts for air flow in straight ducts and pipes (book), 746

Gasket material, Uniphase Cork, corkelastomer, 210
Gasoline. See Petrol
Gass, Sir N., on economic difficulties in petroleum industry, 796
Gass, S. I., linear programming (review), 310; Linear programming methods and applications (book), 554

Gasworks, Walsall, completion of plant for, 594 GATT. See General Agreement on Tariffs and Trade Gaudet, M., on legal status of Euratom, 483 Gauge control, automatic, for strip, 521

— Dial, high-precision, Junghans (Rubert &

 Glasses, reflex, for boilers, longer life for, by W. R. Hoes, 31 Plug, straightness-measuring apparatus, by F. R. Tolmon, 124
 Rope tension, Schmidt (Addison Electric),

— Talymin, for gear teeth errors, 614 Gaugemeter, development by BISRA, 521 G.B. Film Library, Film News, 585; sponsored

films from commerce and industry (booklet), 713; catalogue of cinema films for hire, 812

GCR-2 reactor. See Atomic reactor, gas-cooled Gears (trade publications), 60 - Case fabrication, welding in (David

Brown), 786

- Frigate, Perspex model of, 786 Manufacture by welding (David Brown), 785 Reduction, Safe-D-Speeder, for electric hand drills (John M. Perkins & Smith),

Turbine, full load efficiency testing, 306
Steering. See Steering gear
Teeth errors, measurement under load, by B. Wood, 614
Stick-slip effect at, 614

Gears, variable speed, hydraulic, type F (Carter Gears Ltd.), 484

Wheel rims, lamination inspection, ultrasonic, 785

- Rim rolling on Henry Berry horizontal press (David Brown), 785 Gearbox attachment, Nu-Gear, for hand drill (Bridges), 288

For reactor control, 491

- Reduction, for marine Proteus gas turbine (W. H. Allen), 52 Servo unit, air pressure (Clayton Dewandre)

Gearing, optimum transmission, for machine tools, by E. Stephen (review), 618

GEC Overseas Services Ltd., formation of, 596 GEC—Simon-Carves Atomic Energy Group, atomic power station project for Japan, 427: gas-cooled graphite moderated reactor for ship propulsion, 639; See also Hunterston atomic power station

Geesin, K. F., on superstructures to iron and steel works buildings, 220
Geisler, C. F. R., Ltd., vibration monitor, 633
General Agreement on Tariffs and Trade,

study of restrictive practices in international trade, 272
General Atomic. See TRIGA reactor
General Dynamics Corp., Atlas missile in orbit (Convair-Astronautics division), 3;

orbit (Convair-Astronautics division), 3; supersonic airliner development (Convair Division), 215; US Air Force Atlas intercontinental ballistic missiles, 245; Space Primer (Convair Division), 388; gascooled reactor for ship propulsion, 676; gas-turbine nuclear propulsion plant, 735 General Electric Co., Ltd., agreement with Vacuum Industrial Applications Ltd. in vacuum heating, 16; meter for germanium classification, 69; new appointments at Witton and Erith works, 71; appointments to directorate, 199; contract for turbo-generator sets for CEGB, 199; post-top lantern for Birmingham inner ring road, 215; negotiations with Japan Atomic Power Co. for nuclear power station, 269; gas-cooled reactor project for Japan, 303; boron-steel balls for earthquake safety of Japanese atomic power station, 463; atomic energy activities, 490; impermeable graphite for atomic fuel canning, 490; atomic power station of pruclear power. fuel canning, 490; atomic power station for Japan, 492; design of nuclear power station, 523; work of Appliance Design Centre, 523; production planning at Witton Engineering Works, 526; small general-purpose vacuum furnace, 532; formation of GEC Overseas Services Ltd., 506; agreement, with Machiner Chail formation of GEC Overseas Services Ltd., 596; agreement with Maschinenfabrik Augsburg-Nürnberg AG, 703; Ophitron microwave oscillator, 774; reorganisation of London Sales area, 788; see also GEC General Electric Co. (US), hydrogen peroxide turbo-generator for X-15 upper atmosphere research aircraft, 361; boiling-water reactor development programmes.

sphere research aircraft, 361; boiling-water reactor development programme (Operation Sunrise), 426; boiling-water reactor for propulsion plant, 548; glass-fibre radome for, 579

General Industrial Co., circular slide rule, 420
General Motors Corp.. samarium 153 as low-energy photon source, 395; agreement with United Automobile Workers for advancement of semi-skilled operatives to skilled trades, 537; hydraulic power steering system, 708; Engineering Journal, 801
General Post Office, remote-controlled radio transmitters for Ongar Radio Station, 307;

neral Post Office, remote-controlled radio transmitters for Ongar Radio Station, 307; capital expenditure by, 418; Scotland-Newfoundland cable 418; new cable ship 418; Post Office telephone "No. 706," 512; Post Office 700-Type telephone, by F. E. Williams and F. C. Carter, 512; telephone dialling codes for London, changes in, 564; new telephones, statistics, 609: automatic postal order dispensing 609; automatic postal order dispensing machines, 658; decrease in apprentices in 699; discussion in Parliament on capital expenditure policy of, 699; advertising expenditure, 699; telephone waiting list, 699; staff exchange scheme with industry,

Generating station. See Power Station
Generator, auxiliary, for Explorer dieselelectric locomotive, 277

— Electric, for diesel-electric trawler Falstaff

(English Electric), 375
— for Los Angeles (Brown Boveri), 369 See also Alternator Electrostatic, advantages and defects of, 768
Felici, 466

High-voltage d.c., Felici, 466 as neutron source, 770 Packaged (Miles Hivolt Ltd.) 389

Principle of, 768 Van de Graaff, 768

— See also Accelerator, particle Induction heater (Delapena), 696

 Main, for Explorer diesel-electric loco-motive, 277 - Million ampere, Maggi, AWRE, 703
- Sets, diesel, for AGR reactor (Windscale)

— Signal (trade publication), 618
— Steam See Steam. See also Boiler
— Tandem, advantages of, 769
— at AWRE, 769, 771

Construction of, 768 Principle of, 768 — Thermoelectric, 743

Thermoelectric, 743
— for direct conversion of heat to electrical energy using "polonium 210," 98, 110
— Snap III, 394
— Turbo, hydrogen peroxide, for X-15 upper atmosphere research aircraft (General Electric Co. (US)), 361
— Wind. See Wind; Windmill
— See also Alternator
Geneva International Motor Show, 329
Geodesic dome for railway repair shop, 473

Geodesic dome for railway repair shop, 473 Geological structures and maps, by A. Roberts Geothermal power project, Wairakei, by J. H. Smith, 398

German committee on steel construction, by O. Steinhardt and K. Möhler (book), 746

German Industries Fair, Hanover, note on, 312; description of, 602

Motor cars at Geneva Motor Show, 329 See also Germany Germanium classification meter (GEC), 69

Semiconductor material, 741 Transistors, manufacture, 743 Germany, atomic power station, British tenders

rejected, 367 Crane industry boom, 226

Eastern, atomic energy programme, 12

— Atomic reactor for, 269

— Trade with, 251 596

— Industrial expansion in, 387

— Inflation spectre in, 726

— Iron and steel industry, deconcentration, 699

— and steel works buildings in, by Dr. G. F

— State-controlled firms sale in, 259
— Steel industry, pattern of, 700
— Western, atomic energy programme, 12
— Atomic reactors, 13
— Atomic reactor contract, 269
— Atomic reactor contract, 269

Atomic reactor at Jülich, 206 British interests in, 66

Export position and prospects, 290 Foreign interests in, 66

Foreign trade position in, 290
Orpheus 803 turbojet engine manufacture under licence, 604

- Population statistics on 15 year old children, 693

children, 693

— Radio link by tropospheric scattering, with West Berlin, 711

— Speed limits in, 644

Gesellschaft für Kernenergieverwertung, organic-moderated ship reactor, 548

Ghana Government in Volta River project, 543

— Trade mission to, 312

GHH. See Gutehoffnungshütte

Giant guillotines for paper foil or hardboard

Giant guillotines for paper, foil or hardboard (Furnival), 808

Gibb, Sir Alexander, and Partners, West Thur-

rock power station, 804
Gibb, Sir C., obituary, 100; achievements with
C. A. Parsons, 135
Gibberd, F., on architectural aspects of iron
and steel works buildings, 221; modern
flats (review), 778
Gibbon, P. P. on vernium exide iron corrects

Gibbon, R. B., on uranium oxide-iron cermets

Giboin, E., aide-memoire martinenq des constructions navales (book), 311

Gibson, A., on "runaway" ions in Zeta, 205 Gibson, A. F., progress in semi-conductors. Vol. III (review), 801 Gibson, Prof. A. H., obituary, 260. See LETTER, 387

Gibson, Battle & Co., Ltd., activities of, 337
Giesecke, F. E., technical drawing (review), 342
Giesl ejector exhaust system for steam locomotives, 510
Gillis, R. G., intensity of infra-red absorption bands (bibliography), 713

Girder bridges, steel, British Standard (revised)

- Shot-blasting (Cleveland Bridge & Engineer-

Shot-blasting (Cleveland Bridge & Engineering), 439
Stressed steel, for underpinning without props (Westwood), 280
Supports, roller brackets for advancing, 623
Vierendeel, Reel overhead travelling crane with (British Industrial Engineering Co. (Staffs), Ltd.), 357
See also Beams: Bridges: Floors
Girl apprenticeships, statistics, 234
See also Women See also Women

Glacier Metal Co., dry bearing materials and surface treatments, 503; Staff planning, 517 Gland packings, extractor tool for, free offer of

(Crane Packing), 312 ss, "Armourplate," in Rhodes site flow indicator, 569

Engineering handbook, by E. B. Shand (review), 29 Fibre construction for boats, 86

— Fissile and fertile material in, for atomic fuel elements, 110

- Unsulation (trade publication), 185
- Insulation (trade publication), 185
- Packaged cooling tower (Film Cooling Towers (1925) Ltd.), 601
- Radome, construction of (Goodyear Aircraft Corp.), 579
- and Terylene filters (ICI), 620
- Float process (Pilkington Bross.), 120

Foamed, Foamsil, properties and applica-tions of (Pittsburgh Corning Corp.), 379 Insulation, Stay-Dry, for piping (Pitts-burgh Corning Corp.), 183
 Industrial, QVF Ltd. sales in US, 251

- Industry, Belgium, position and prospects of, 636 Low melting point, for electronic com-ponents (Bell Telephone Laboratories), 747

 Melting tank furnaces, by R. Gunther (book), 123 n passenger-carrying railcar for French Railways (Renault), 471

Reflex gauge, for boilers, longer life for, by W. R. Hoes, 31
Reinforced plastics casings for Bedford diesel industrial units (W. & J. Tod, Ltd.), 505

Technology, Society of. See Society
 Toughened, Armourplate (trade publication), 377

Larger sheets of (Pilkington Bros.), 379
Tube cutter (Electrothermal Engineering Ltd.), 730
Water street

Water attack on, 31 Glasscloth laminates (trade publication), 746 Glenny, E., on high-temperature properties of ceramics and cermets, 91

Glitsch ballast tray (Metal Propellers Ltd.), 665 Globe Pneumatic Engineering Co., Ltd., portable pneumatic capstan winch, 358 Glocrete SR coating for concrete floors (Corro-

sion Ltd.), 747 Glossary of automation terms, 475 Optics and spectroscopy, 475 Strata control, tri-lingual (book), 29

Vacuum technology (book), 650
 Gloves, nylon, for protection against abrasive materials (British Nylon Spinners), 453

Glovers (Chemicals) Ltd., Fomescol emulsion breaking agent for reducing sea pollution, 747

Glow plug for diesel engines (KLG), 496
Glow-worm Boilers Ltd., Oil-Crat oil-fired domestic boiler, 596
Glueing machine, Thermotex, for cardboard cartons (Lerner Machine Co.), 685

cartons (Lerner Machine Co.), 685
Glyn, Col. R., on work for elderly persons, 330
Godber, Lord, on petroleum industry, 796
Goddard, Dr. R. H., awarded Louis W. Hill
Space Transportation Award, 207
Godfrey, J. W., on technical writer (book), 123
Goggin, K. M. M., review of efficient use of
fuel, 410

Goggle cleaning and de-misting cabinet (Fleming Safety Equipment). 166
Golovin, Dr. I. N., on thermonuclear research,

Goodman, George, Ltd., nylon coil bobbins for miniature transformers, 653
Goodyear Aircraft Corp., construction of glassfibre radome, 579
Goodyear Pumps Ltd., positive displacement pump for ships' water mains, 486
Gordon, Lord Dudley G., on politicians and steel industry, 359
Gordon & Gotch Ltd., Perf-A-Matic rotary perforator for commercial stationery, 262
Götaverken AB, steel hatch cover with hydraulic screwjack operation, 486; new shiplic screwjack operation, 486; new ship-yard for line production at Arendal, Sweden, 561; hydraulic screw jacks for hatches on cargo liner *Gudrun Bakke*, 688 Gouda cheeses, bulk handling by De Produ-

Gouda cheeses, bulk handling by De Producent, 58
Gould, L. A., analytical design of linear feedback controls (review), 252
Goulder, J., & Sons, Ltd., bench-mounting lead measuring machine, 664
Gourock Ropework Co., Ltd., air-house with PluViaC skin, 610: ropes in polyethylene yarn, 748
Gouser, B. W. (Ed.), technology of columbium (book), 123
Government department for Durham, discussion in Parliament on, 363
— Grants for universities, 235
Governors (Ardleigh), 101

Governors (Ardleigh), 101

— Four-weight for Explorer diesel-electric locomotive (Blackstone), 277

Grab, hydraulic, for cranes handling coal (George Cohen 600 Group), 292
Grabbe, E. M., handbook of automation, computation and control (review), 713
Graduates in industry, fall in demand for, 449

- Science, invitation to (scientific Civil Service career booklet), 235 Graham Clark Lecture, by Sir A. Plant, 385 Grain carriers of aluminium alloy (Scammell), 749

— Scourer (trade publication), 474
Gramdeck tape recorder deck for use with radiogram (Andrew Merryfield), 564
Granite surface finish, Thermal-Texturing

(Union Carbide), 284
Grant & West Ltd., Solution No. 307 for cement removal, 477
— Government, for universities, 235
— for research projects (DSIR), 105
Granville P. A. on dust and cart in flux cases.

Granville, R. A., on dust and grit in flue gases, 285

Graphical signs and symbols, directory of, 343 Graphite blocks for American aircraft industry (Union Carbide), 683

(Union Carbide), 683

— for reactors, test rig for, 47

— Colloidal, nuclear applications of, 47

— Impermeable, for atomic fuel canning, 490

— for HTGC reactor system, 239

— Tube, metal-clad, Metica, 491, 555

Grating, extruded aluminium, Alaflor (Archibald Low), 159

Gravimetric sampling of dust and grit in flue

Gravimetric sampling of dust and grit in flue gases, by R. A. Granville and W. G. Jaffrey, 285

Jaffrey, 285 Graviner Manufacturing Co., Ltd., oil mist

Graviner Manufacturing Co., Ltd., oil mist detector, 486
Gravity, lunar, calculations on, 333
Gray, P. G., on noise in flats, 192
Gray Tool Co., licence agreement with Ruston & Hornsby for high pressure and temperature connections, 636
Grease, radiation effects on, 716 Tanks, Isomantle electric surface heaters for,

Great Eastern, centenary of, 10 North Road, construction work progress on, 450

- Road, Stamford bypass on, 776 Greece, atomic energy in, 46

— Energy programme, 46 Green, Dr. D. C. Lycett, on Senior Economisers, 668

misers, 668
Green, George, & Co., water quenched cupola spark and dust collector, 721
Greencastle site survey for atomic power station, 735
Greenwich, R.N. College, chair of nuclear science and technology at, 206
Greenwood's & Airvac Ventilating Co., Ltd., ridge line ventilator, 665

ridge line ventilator, 665
Greer's Ferry hydroelectric project, rejection of English Electric bid in, 129, 171, 272; turbine contract to Baldwin-Lima-Hamilton Co. 456 ton Co., 456 Gregory, E., on heat-treatment of steel (book), 376

Grenoble atomic energy centre, 176 Gresham Transformers Ltd., auxiliary transformers for Bradwell atomic power station,

Grid frameworks' analysis, by A. W. Hendry and L. G. Jaeger (book), 154

—— Resolved by generalised slope-deflection,

for replica device for strain measurements, by V. M. Hickson, 483 Universal, for slotted angle (Dexion), 685

See also Supergrid Griffin, D., review of Network Synthesis and Passive Networks, 92

Griffiths (Caterers), Ltd., vending machines 267 Grimston, B., Skie stabiliser, 87 Grimston Electric Tools, Ltd., low height compound-slide table, 292; co-ordinate drilling and boring machine, 532

Grindell, Dr. D. H., on atmospheric pollution by solid particles, 350 Grinding and crushing: bibliography (book),

Head with hydrodynamic gas bearings for, by Dr. S. A. Sheinberg and A. M. Kharitonov, 677

Machine, cylindrical, for manual operation (Myford Engineering Co., Ltd.), 534

High-precision (A. A. Jones & Shipman,

Ltd.), 324

— Plain cylindrical, P.G.1 (British Northrop), 632

rop), 632

— Roll, heavy-duty (Churchill), 127

— U.G.1 universal (British Northrop), 632

— Wheat, rollermills for, at Barnes Milling, Ltd. (Thomas Robinson), 156

— Wheels, standardisation of, 125

Grits, diamond, "Pressure-Tested" (Diamond Tool Research Co. Incorp.), 309. See

Correction, 588

— Emission from boiler furnaces, measurement of (BCURA), 613

nifile gases, gravimetric sampling of, by R. A. Granville and W. G. Jaffrey, 285
Ground Explorations Ltd., site survey for stamp and press shop at Hawker Aircraft

stamp and press shop at Hawker Aircraft factory at Squires Gate, 213

— Movement near trees planted in clay, 611
Grouting, low pressure, for Cononish Viaduct repairs, 642
Growth of iron castings, BCIRA work on, 683
Grubenmann, M., I, x-Diagramme feuchter Luft (book), 746
Grumbling, Plain Words on, 226
GS34 gasifier. See Gasifier
Guardion cathodic protection (trade publication), 586
Gudrun Bakke cargo liner, hydraulic screw jacks for hatches on (Gctaverken), 688

jacks for hatches on (Gotaverken), 688
Guest Keen Iron & Steel Co., Ltd., ore handling at East Moors Works, by T. Jenkins, 593
Guest Keen and Nettlefolds Group, history and activities of constituent companies (brochure), 423; library and information division, 519
Guide to concerte road construction; questions

division, 519
Guide to concrete road construction: questions and answers (review), 61
Guided weapons. See Weapons; see also Atomic weapons
Guillemin, E. A., on synthesis of passive networks (review), 92
Guillet, L., metallography (book), 802
Guillotines, Giant, for paper, foil or hard-

Guillotines, Giant, for paper, foil or hard-board (Furnival), 808

— Metal, Besco-Truecut (F. J. Edwards, Ltd.), 730

Gumz W., furnace slags textbook (review) Gumz V 554

Gun, anti-tank, flashless and recoilless, by
Lt. Col. L. V. S. Blacker, 186

Welding, "pull-through," for thin aluminium (British Aluminium Co.), 503

Gunther, R., on glass-melting tank furnaces (book), 123

Günther, W., theory of torsion (review), 282

Gurney, Sir G., steam carriage, 424

Gusto, Schiedam, Atlas 400 ton floating crane, 595

Gutehoffnungshitte, bisectors

Gutehoffnungshütte, bicentenary and activities of, 264
Gutters, roof, Welvic pvc (ICI), 416
Guttering, BRS Digest on, 64
Guyrex Equipment, Ltd., pin-jointed structural members for temporary structures, 408
Guyson Industrial Equipment Ltd., Sitdown shot-blasting cabinet, 487

shot-blasting cabinet, 487
GWB Furnaces, Ltd., Powermaster packaged boiler, 452

Gypsum plaster models for reinforced concrete design, 468 Gyratory crushers (Babbitless Co.), 728 Gyro-electric steering control for ships, 653

Gyro-hydraulic steering control for sings, 033
Gyro-hydraulic steering control for tanker
Hadrian (Sperry-Atlas). 653
Gyrogenic eng neering, recent advances in, 713
Gyroscope in inertial navigation, 679
Gyroscopic compass, Arma Brown, 749

## Н

HACKING, Sir J., on work of plant engineers, 331
Haden, G. N., & Sons, Ltd., heating and ventilating for new building for CIBA (ARL), Ltd., 707
Hadfold Group reorganization of sales activity

Hadfield Group, reorganisation of sales activi-

Hadfields Ltd., annual report, 359
Hague, Sir K., on British export problems, 659
Hair packaging material, Tuflite (Xetal Products), 780
Halcrow, Sir William, & Partners, Volta River

project, 804
Halden boiling heavy water reactor, joint programme for, 176 Hali, A. J. C., on interstitial patterns (book),

Hall, A. N., review of General biochemistry,

Hall, A. R., history of technology. Vol. 5 (review), 216
Hall & Co., Ltd., building materials (trade publication), 618
Hall Harding Ltd., Ammonax printing papers,

345; Duralax translucent drawing papers, 345; Conquest bench-type photocopying and developing machines, 389

Hall. J. & E., Ltd., refrigerated containers for marine use, 570; amalgamation proposal with Thermotank Ltd., 764
Hall, Matthew, & Co. Ltd., design-by-model policy, 525
Hall, N. A., thermodynamics of fluid flow (review), 585
Hall Telephone Accessories, Ltd., soft drink vending machines, 266; vending machines, 266

266
Hall, W. B., appointed to chair of nuclear engineering, Manchester University, 703

Hallam atomic power facility, contractors for,

Hallsworth moulding system (Rubery, Owen),

Halmatic Ltd., Bevinda plastics-hulled motor yacht, 87
Halsbury, Earl of, on electromechanical themes in machine-tool design, 53; remarks on activities of NRDC, 182
Haltrac, Ltd., Midget Hoist for lifting 1,000-lb. loads, 160
Hammer, steam, B. & S. Massey, 381
Hammond, P. H., feedback theory and its applications (review), 252
Hammond, R., introduction to dock and harbour engineering (review), 554
Hamworthy Engineering, market research by, 528
Hancomatic oxygen cutting machine, 785

Hancomatic oxygen cutting machine, 785
Hancoplane edge preparation machine, 723
Handbook of automation, computation and control. Vol. I, control fundamentals, by E. M. Grabbe, S. Ramo, and D. E. Wooldridge (review), 713

— British Engineers', 1958 (book), 29

— Checking Prepackaged Commodities, 745

— Cycles collection at Science Museum. Part II, by C. F. Caunter (book), 29

— Glass engineering, by E. B. Shand (review), 29

Glass engineering, by E. B. Shand (review), 29
Materials testing. Vol. I: qualitative and quantitative instrumentation, by E. Siebel and N. Ludwig (review), 553
Mathematical tables and formulas, by R. Stevens Burington (book), 746
Mechanical Engineers', by T. Baumeister and L. S. Marks (book), 746
Petroleum industry, by G. Sell and H. A. Dossett (book), 217
Physics, by E. U. Condon and H. Odishaw (review), 681
Pump users', by H. Addison (book), 217
Handley Page, 50 years' history of, 636
Handling bricks, packed system, 671
Coal, hydraulic grabs for (George Cohen 600 Group), 292
by tractor, U-blade for (Marshall Organisation), 643
of Gouda cheeses by De Producent, 58

of Gouda cheeses by De Producent, 58 - Iron ore, meeting of Iron and Steel Engineers Group, 593

— Long welded rails, 739

— Mechanical, trend to, 524

"Handtruck" hand truck (Conveyancer Fork
Trucks), 453

Handycan polyethylene container for liquids (Lacrinoid), 600
Haney, D. C., on tractor power, 227
Hanger, helicopter (Chuter), 579
Hangers, constant support (Vokes Genspring), 491

Hanover Fair, note on, 312; description of, 602
Hansen, M., durchflussmessung (book), 93;
on constitution of binary alloys (review), 145
Hanson, T., Heenan Multiform Manula (book), 92
Harbour, Bluff, extensions, New Zealand, 671

Harbour, Bluff, extensions, New Zealand, 671

— and channel construction by atomic explosion, 206

— and dock engineering, introduction to, by R. Hammond (review), 554

— Malta deep-water, tenders for, 363

Harbourmaster outboard propulsion unit for fire float, 622

Hard facing. See Hardfacing

Hardboard guillotines, Giant (Furnival), 808

— Masonite Benelex (trade publication). 377

Hardcore for roadmaking from disused aerodromes, 543

Hardening. See Heat treatment

— Strain. See Strain-hardening

Hardfacing alloys, sprinkle-fuse method o applying (Deloro Stellite), 209

— Spray-fuse, automatic machine for (Deloro

applying (Deloro Stellite), 209

— Spray-fuse, automatic machine for (Deloro Stellite), 503

Harding, H. J. B., London heliport, 543

Hardware buyers' guide and ironmonger diary (review), 310

— Trade, new thinking plea for, 787

Hardy, H. W., jig and fixture details and units (book), 475

Harker G. F. Herrenden, Review of Handbook of Physics, 681-682

Harris, A. J. and J. D., hyperbolic roof for Commonwealth Institute. 804

Harris, K. D., subsonic drag and pitching moment characteristics of slender cambered bodies (book), 778

Harris, S. T., model of Gurney steam carriage, 424

Harrogate Festival of Films in the Service of

Harrogate Festival of Films in the Service of Industry, 598, 627
Hartley, Sir H., on pipeline transport of coal, 258

Hartridge, Leslie, Ltd., Smokemeter for smoke

density of diesel exhausts, 196

Harwell. See Atomic Energy Research Establishment (Harwell)

— Isotope School. See Isotope

— Reactor School. See Reactor

Hat and Allied Feltmakers Research Association British See British

tion, British. See British

Company, trade union ownership of, 207

Protective, discussion in Parliament on, 392

Hatch with hydraulic screw jacks on cargo liner

Gudrun Bakke (Gotaverken), 688
Covers, Erman's rolling, 349
— Steel, with hydraulic screwjack operation (Gotaverken), 486

Haulage and tipper chassis, Albion Reiver (Leyland Motors), 634

Hawker Aircraft, Ltd., design and construction of machine foundations in stamp and press

of machine foundations in stamp and press shop at Squires Gate factory, 212

Hawker Siddeley Australia Pty., Ltd., formation of, 264

Hawker Siddeley Group, Avro 748 turbo-propairliner project, 103; progress and activities of, 167; formation of Hawker Siddeley Australia Pty. Ltd., 264; provisional order for Argosy AW650 freighter aircraft for Riddle Airlines, 369

Hawker Siddeley Industries, activities of, 167

Hawker Siddeley Nuclear Power Co. Ltd., heat transfer testing of fuel element bundles, 303; organic-moderated reactor

for ship propulsion, 641; fuel element bundle for organic moderated reactor for ship propulsion, 674; See also *JASON* 

Haycock, H. F., flame plating, 419
Hayes, J. G., on interstitial patterns (book), 586
Hayward & Martin, Ltd., technical publications service (trade publication), 586
Hayward Tyler & Co., Ltd., glandless pumps for German reactor, 491
Head loss, test rig for, NEL, 749
— and Threads: Buyers' Guide, 1959 (review), 649

Head Wrightson Aluminium, Ltd., activities of,

Head, Wrightson & Co., Ltd., Commonwealth activities of, 337; nuclear activities of, 337; associated companies, 337; overseas steelworks orders, 337; heat exchangers for Bradwell atomic power station, 525

Head Wrightson Colliery Engineering, Ltd., activities of, 338

Head Wrightson Machine Co., Ltd., activities of, 337

Head Wrightson Processes Ltd., activities of, 337

Head, Wrightson Stockton Forge, Ltd., winding plant at Rufford colliery, 338; rotary driers for ICI fertiliser plant, 589 Head Wrightson Teesdale, Ltd., activities of,

Heading, J., matrix theory for physicists (review), 60
Headlamps, vehicle, testing (book), 154
Health, air pollution effects on, 351
— Mental, progress in treatment of, 669
— Mineworkers, X-ray examinations for, 142
— Organisation, World. See World Health
— Physics gamma spectrometry in 236

Organisation, with the second of the se

operations, 236

— Shift workers, 365

— See also Safety

Hearing aid, Amplivox Sonett, 788

— Types and methods, 788

— and speech, connection between, 788

Heat bibliography, 1955-6, note on, 123

— Direct conversion to electrical energy, 98, 110, 394

110, 394
Exchangers: applications to gas turbines, by W. Hryniszak (review), 376
— for Bradwell atomic power station, 525
— Dynamic response computation, 783
— Flame/air (Johnson and Starley). 452
— for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 782
— Tubes, wire wound (Clayton Dewandre), 504

- Flow in brake drums, by T. P. Newco Insulation. See Insulation

Insulation. See Insulation
 Power thermodynamics, by V. M. Faires (review), 217
 Pumps for house warming, 352
 Recovery in sterilisation process at Kitt Green factory of H. J. Heinz, 782
 Transfer and thermodynamics, by D. A. Mooney (review), 442
 Treatment, annealing, bright, at Birlec's Aldridge works, 478
 Annealing of Pearlitic malleable iron castings, electric furnace equipment for, at Ley's Malleable Casting Co., Ltd., 245
 Annealing of plates for magnetic sectors, 754
 Atmosphere generator (Birlec), 556

Atmosphere generator (Birlec), 556

at Birlec's Aldridge works, 478

Case-hardening compared with Sulfinuz process, 117

— Furnace. See Furnace

Hardening, at Birlec's Aldridge works, Nitriding compared with Sulfinuz pro-

Normalising, at Birlee's Aldridge works,

of steel, by E. Gregory and E. N. Simons (book), 376

(book), 376
— Stress relief, low temperature, of welded platework, by J. C. Dixon, 651. See LETTER, 695
— Sulfinuz process for surface treatment of ferrous metals, by F. D. Waterfall, 116
— Sulphiding compared with Sulfinuz process, 118
— Tempering, at Birlec's Aldridge works, 478

478

Heater, air, all-radiant, contract for, for National Gas Turbine Establishment (Birwelco), 423

— Cupola blast, independently fired (Incandescent Heat Co.), 722

— Direct-fired, for heavy fuel oil (Foster Wheeler), 191

— Electric surface, development of (Isopad), 522

— Surface Isomantia for account and 200

— Surface, Isomantle, for grease tanks, 382 Induction (Delapena), 696

Motor vehicle, and demister, D9 (Clayton), 143

143

Water. See Boiler; Water
Heating, central, electric floor warming as, 192

Heat pumps for, 352

Oil-fired, growth in, 73

Safrax water circulator for (Sanders Valve Co.), 352

Coils, tanker, developments in, 250

Compression, for nuclear fusion research, 703

Domestic, BCURA work on, 613
Equipment for transport (J. Stone), 134
Floor, off-peak, falacies of, by H. H. Bruce, 592. See LETTER, 663
Industrial, BCURA work on, 613

and Ventilating industry year book (review), 310

- See also Fires

Heavy element halides, properties of, 175

- Oxides, properties of, 174

- Production of, 174

Water, production of, 204
Production plants, 204
Separation processes, 204

Thoria-urania systems, nuclear properties of, 426

Heckman, T. P., on superheated atomic reactor,

Hedgehog floor cleaning machine (British Vacuum Cleaner & Engineering Co., Ltd.), 256
Hediger, H., Daivite Microtester for surface measurement, 352
Hedin, Ltd., shaker hearth furnace, 293; electric ovens with external fan and heater, 632

electric ovens with external fan and heater, 632

Heenan Dynamatic coupling for blade protection on cutter-dredger Barbados, 114

Heenan & Froude, Ltd., equipment for BOAC test bed at Nantgarw, 95; Heenan Dynamatic coupling for blade protection on cutter-dredger Barbados, 114; tubular air coolers for Priest Rapids Dam, 114; test plant for Rolls-Royce Dart turbopropaircraft engines for BEA, 223; Adjusto-Spede fractional h.p. drive, 327; test-beds for Rolls-Royce oil engines, 811

Heenan Multiform Manual, by T. Hanson (book), 92

Hehenkamp, T., on life of ballasts for gasdischarge lamps, 32

Heinz, H. J., Co., Ltd., architecture of new factory at Kitt Green, 576; heat recovery in sterilisation process at Kitt Green

in sterilisation process at Kitt Green factory, 782

Helical post-deflection acceleration in instru-ment cathode-ray tube (Mullard), 88 Helicar trailer for Kolibrie helicopter, 88 Helicopter. See *Aircraft* Helio Aircraft Corp., Helio Super Courier STOL aircraft, 264 Helioptt on Battersea hank of River Thames

Heliport on Battersea bank of River Thames, 542

Helium-cooled reactors. See Atomic reactors

— Liquid, properties of, by G. V. Chester, 466
Hellyer Bros., Ltd., diesel-electric trawler
Falstaff, 375

"Help Yourself Game" (individual productivity incentive), 765
Hemp. W. S., theory of structural design (book), 31!
Hendry, A. W., analysis of grid frameworks and related structures (book), 154
Hendry, W. Brownlie, on depreciation of plant and machinery, 479
Henley's, W. T., Telegraph Works Co., Ltd., plastics joint boxes, 588
Hennessy, Sir P., on Ford Motor Co., 488
Hensoldts (of Wetzlar), Technoscope hole viewer, 422
Heraeus, W. C., consumable-arc vacuum furnace. 626
Herald motor car (Triumph), by G. Wilkins,

Herald motor car (Triumph), by G. Wilkins, 580

Herbert, Alfred, Ltd., portable lapping attachment for milling machine, 293
Hercules aircraft, static line retriever system for paratroopers on (Lockheed). 374
— C-130 troop carrier aircraft, boundary layer control for (Lockheed Aircraft Corp.), 505
HERO atomic reactor project, Windscale, 206
239
Heron, on Prof. A. H. Giberg, 387

Hero atomic reactor project, Windscale, 206 239

Heron, on Prof. A. H. Gibson, 387

Herstmonceux Castle. See Royal Observatory

Heycon portal frames for helicopter hangar, 579

Heyman, Dr. J., on automatic design of steelframed buildings. See Letters, 68; on 
limit design of framed structures, 275

Hickson, V. M., on replica device for strain 
measurements using grid, 483

Higgs & Hill, Ltd., transit shed for Royal 
Victoria Dock, 94

High Duty Alloys, Ltd., decentralisation of 
sales activities, 312; staff planning, 517

High Marnham power station, 200 MW turboalternator completed for, 594

High Range for radar and telemetry studies on 
X-15 upper atmosphere research aircraft, 362

— Temperature materials, spray-forming, 652

Temperature materials, spray-forming, 652 gh Temperature Reactor Development Associates, helium-cooled reactor project,

Voltage Engineering Corp., plans for nanufacturing plant in Amersfoort manufacturing plant in Amersfoort (Netherlands), 391; tandem accelerator, 771

Highlands, Government assistance for new factories in, 363
Highways Engineers, Institution of. See Institution

Engineering, digital terrain model computation system for, 751

— Scholarship at Birmingham University, 105

— School of Birmingham University, development of, 573, 579

Research Board, publications, 61

Trans-Canada, progress, 776

See also Road

— See also *Road*Hilger & Watts, Ltd., self-adjusting levels, 101.

Hilger & Watts, Ltd., self-adjusting levels, 101.
See Correction, 324
Hill, Prof. A. V., scientific advisory work in India, 300
Hill, Dr. C., on foreign distribution of British science journals, 330
Hill, Dr. D. W., on engineering attainment in textile industry, 77
Hill, K. A., Machinery's annual buyers' guide 1959 (review), 649
Hill, Louis W., Space Transportation Award to Dr. R. H. Goddard, 207
Hill, Richard, Ltd., Maxweld fabric reinforcing material (trade publication), 283
Hillman Minx motor car test on Belgian cobblestones, 368
Hire of machines. FJE plan, 631
Purchase on domestic appliances, effect of,

Purchase on domestic appliances, effect of,

of machinery, 631 — on petroleum equipment, 628

Hirsch, E., appointment as Euratom president,
258; on Euratom Supply Agency, 366

258; on Euratom Supply Agency, 366
Historical, engineering centenaries, 10
Review of time measurement (Part 1), by F. A. B. Ward (book), 29
History, company, plea for presentation to Newcomen Society, 3
Guest Keen and Nettlefold Group, 423
Handley Page, 636
Jarrow Metal Industries, 764
Jarrow Tube Works, 764

History, paper industry (book), 61

— Radio (film strip), 142

— Skoda Works centenary, 700

— Standard Telephones and Cables. 604

— of Technology. Vol. 5: late 19th century, by C. Singer, E. J. Holmvard, A. R. Hall and T. I. Williams (review), 216

— Ultra Electric, Ltd. (brochure), 411

— Ed. Züblin AG, 707

History, paper industry (book), 61

— Ultra Electric, Ltd. (brochure), 411

— Ed. Züblin AG, 707

Hitchman, Sir A., full-time member, UKAEA,

Hither Green, railway building at, contract to Taylor Woodrow, 495

Hives Chair of Thermodynamics, Nottingham University, 48 Hives, Lord, report of National Council for Technological Awards, 605

Hivolt, Miles, Ltd., sub-critical reactor for research and education, 141; packaged electrostatic generator, 389

Hix, C. F., Jr., physical laws and effects (book), 746

Hobson-AERE honeycomb unit for radio-isotope manufacture, 491 Hobson-CRL master-slave manipulator, 491

Hobson, H. M., Ltd., exhibits at Engineering Exhibition, 491 Hochwertiges Gusseisen (Grauguss), by E. Piwowarsky (review), 216

Hodge, J., review of Gas Turbines for Aircraft, 343 Hoes, W. R., on reflex gauge glasses, 31

Hoist, Midget Hoist, for lifting 1,000-lb. loads (Haltrac), 160

(Haltrac), 160

Mine, recorder for (Metropolitan-Vickers Electrical Co.), 327

Pneumatic, for Fawley Refinery, 563

See also Crane; Gantry; Transporter
Hole viewer, Technoscope (Degenhardt & Co., Ltd.), 422

Holidays Abroad, AA Guide, 368

Payment for—manual workers, agreemen on, 637

Holland & Hannen, and Cubitts (CD) Ltd.

on, 637
Holland & Hannen and Cubitts (GB) Ltd.,
Doncaster by-pass, 579; London-Birmingham motorway, 776
Holland & Hannen and Cubitts (North West)
Ltd., annual report, 732
Holland, J. P., review of digital computer components and circuits, 682; review of system design of digital computers at National Bureau of Standards: methods for high-speed addition and multiplication, 682

Metal products from, 1958 (review), 649

for high-speed addition and multiplication, 682

Metal products from, 1958 (review), 649

See also Dutch
Holloway Bros. (London), Ltd., railway maintenance extensions at Ramsgate and Stewarts Lane depot, 776
Holman Bros., Ltd., skip winding plant at Rufford Colliery, 338; service organisation of, 527; pneumatic hoists for Fawley Refinery, 563; Sinex Turbo Vibrator for shell concrete, 738
Holman Rotomotors, remote control equipment for (Maxam Power, Ltd.), 420
Holmes purifiers for Walsall Gas Works, 594
Holmes, W. C., & Co., Ltd., Holmes-Schneible multi-wash system, 721
Holmstrom, Dr. E., on English as universal technical language, 168. See Letter, 195
Holmyard, E. J., history of technology. Vol. 5 (review), 216
Homalloy body for refrigerated containers, 570
Home Fire Extinguisher (Pyrene Co.), 480
Homogeniser, liquid whistle, Minisonic (Ultrasonics Ltd.), 781
Honeycomb composite panels, flaw detection in (Martin Co.), 284
Honeywell Controls, Ltd., electric control switches, 327
Hong Kong Airport, new runway opened, 428
Honours, New Year, 36
Hooke's Law, 798
Hoover, Ltd., production planning of Hoovermatic washing machine, 526
Hopkinsons, Ltd., closed-circuit television water-level indicator, 166
Hopkirk, K. R., obituary, 568
Hoppers, materials flow from, 447

— Internal (Sinex), 729
Horlock, J. H., on axial-flow compressors (book), 61
Hormone, juvenile, research on, 796
Hose clips, Jubilee Clipdriver screwdriver for (L. Robinson & Co.), 697

Hormone, juvenile, research on, 796
Hose clips, Jubilee Clipdriver screwdriver for
(L. Robinson & Co.), 697

— Coupler, quick action (A. Schrades's Son),

Coupling, Binks, for fluid lines (Airred Bullows & Sons), 728

Fire (Trade publication), 283 Flexible, in ptfe (William Rose Ltd.), 780 Handling equipment, pneumatic, at Fawley Refinery, 563

Industrial (trade publication), 554
 Recl foam fire extinguisher (Pyrene Co.),

Hosegood, S. B., on LMFR power reactors, 313
Hospital administration, note on, 270
Ahmadi, Kuwaii, packaged water chilling sers for (York Shipley), 781
Houghton, P. S., on engineering drawing and drawing office practice (book), 61
Hours of labour, demand for shorter, AEU, 637
Engineering industry, position and

- Engineering industry, position and prospects of, 8

prospects of, 8

— Reduction of, note on, 270

— 35 hour week claim in US, 429

— Trend of, 451

— See also Shift
House, air, with PluViaC skin (Gourcek Ropework Co.), 610

— Building, conservatism in, Plain Words on 162. See Letter, 291

— Under plastic tents, 272

— Council (report), 429

— Layout in residential development schemes, 64

Magazines, role of, IWS conference, 364
Style exhibition, 564

Housing and Local Government, Ministry of, Flats and Houses, 1958 (layout in residential development schemes), 64; Councils and Their Houses, (report), 429

— Standards inquiry, plea, 699 Hovercraft, principle of, 767

— Prototypes (Saunders-Roe), 637 How to calculate quickly, by H. Sticker

How to calculate quickly, by H. Sticker (review), 801
Howard, Stanley, Ltd., Master Bar jig boring machine, 5; Kolb horizontal drilling machines, 730
Howells, D. A., on building structures to withstand earthquakes, 346, 631. See LETTER, 599
Howitt, L. C., Manchester bus shelter, 94
H.P. actuators for serve or non-serve operation.

H.P. actuators for servo or non-servo operation (Hydraulics & Pneumatics, Ltd.), 487

(Hydraulics & Pneumatics, Ltd.), 487
 Automatic variable delivery pump (Hydraulics & Pneumatics, Ltd.), 486
 Hryniszak, W., on heat exchangers: application to gas turbines (review), 376
 HSD tensioner for strapping bands (Packers Supply Co., Ltd.), 293
 HTGC reactor. See Atomic reactor, high-temperature gas-cooled
 Hudson G. F. on industrialisation of China 98

temperature gas-cooled
Hudson, G. F., on industrialisation of China, 98
Huffadine, J. B., on Cr-Al<sub>2</sub>O<sub>3</sub> and Cr-Mo-Al<sub>2</sub>O<sub>3</sub> cermets, 91
Hugh Macmillan Memorial Lecture on place of technologist in management, by Viscount Simon, 207
Hughes, F. A., & Co., Ltd., Guardion cathodic protection (trade publication), 586
Hughes, J. D. H., on atomic light, 497
Hughes, L. E. C., Electronic Engineer's Reference Book (review), 649
Hull Bridge, opposition withdrawn, 642
— New dock facilities commissioned, 670
— Plastics, for boats, 86-87
— Resistance, research on, 766

Resistance, research on, 766 Human beings, overload rate for, by K. F. H. Murrell, 364

Element in productivity, 429
Energy, frozen, Prof. F. Roethlisberger on,

- Engineering, trade unions' interest in, 693 Humber Bridge Bill, opposition withdrawn, 642

Humber Bridge Bill, opposition withdrawn, 642
Hump-back furnaces for annealing and
brazing (Birlec), 484
Humphrey, W. S., Jn., switching circuits with
computer applications (review), 585
Humphreys and Glasgow, Ltd., plant for
Onia-Gegi catalytic oil-gas process for
Japan, 435; carburetted water gas equipment for Wallsall Gas Works, 594;
carburetted water gas plants for Japan, 757
Hungary, economic position, 727

Hungary, economic position, 727 — Industrial development plans, 131 — Output position in, 67 Hungerford Suspension Bridge over River Thames, 538

Hunt, K. H., on dwell-linkages in space, 248 Hunter, E. J., annual report on Swan, Hunter and Wigham Richardson, Ltd., 572

Hunter, G. (London), Ltd., Piccolift fork truck for confined spaces, 760 Hunterston atomic power station, progress on, 34; shield construction, 426; Loch Awe construction scheme in association with,

Hunting Aerosurveys Ltd., survey for Iranian
Oil Exploration and Producing Co., 804
Hunting Geophysics, Ltd., magnetometer
equipped AC-3 aircraft for oil prospecting,

Hurd, A., Shipping World year book and who's who (book), 29
Hurley, F. I., consolidated report on isotope separation, 202 Hurry, C., survey on nationalisation of iron

and steel industry, 194

Hurst, Dr. G. M., consolidated report on chemical processing, 172

Hurst Nelson & Co., Ltd., threatened closure

of, 363

of, 363
Huthsteiner, R. E., on Cummins Diesel International, 126
Hütte: taschenbuch für betriebsingenieure (betriebshütte), Vol. II (book), 778
Hütten-und-Bergwerke Rheinhausen, acquisition of majority shares in Bochumer Verein fur Gussstahlfabrikation, 264
Hutton & Mitton, Ltd., four-way valves for hydraulic rams, 685
HWR reactor. See Atomic reactor, heavywater moderated
Hyde Park road improvement scheme, twinmain boring for, 611

main boring for, 611

Hydrant fuelling system for aircraft, 648 Hydraulic copying lathe, Mini-Kop (Myford Engineering), 533 Deep drawing press (Pitzmann and Pfeiffer),

Driving unit for spinning lathe (Leifeld), 263
 Equipment development laboratory (Plessey), 549

Mobile field research unit for (Plessey), 549 Oil, circuit d sign in, NEL, 749

 Grab for cranes handling coal (George Cohen 600 Group), 292
 Lift system for David Brown 950 tractor, 406 Machinery for hydro-electric pump-storage schemes, 763

Mono-Rail transporter (Road Machines (Drayton), Ltd.), 390
Motion in spinning lathe (Leifeld), 263

Motion in spinning lattic (Leiteld), 263
Power steering system (General Motors Corp.), 708
Press. See Press
Pump. See Pump
Rams, four-way valves for (Hutton & Mitton), 685
Relief valves, analogue method for design of (MERL), 151
Screw jacks for hatches on cargo liner

Screw jacks for hatches on cargo liner Gudrun Bakke (Gotaverken), 688 Steering unit for small vessels (Keelavite Hydraulics, Ltd.), 487

Systems, swivel pipe couplings for (Avica Equipment), 621. See Correction, 720
Test set, portable (Charles S. Madan), 455
Transport of coal, 258
Turbine. See Turbine; Power plant

-- Variable speed gear (Carter Gears Ltd.), 48

Hydraulics, general, by A. Schlag (book), 802 Hydraulics & Pneumatics, Ltd., H.P. automatic variable delivery pump, 486; H.P. actua-tors for servo or non-servo operation, 487 — Research Station, silting studies, 392;

tors for servo or non-servo operation, 487

Research Station, silting studies, 392; resistance of fluids flowing in channels and pipes, 473; charts for hydraulic design of channels and pipes, 473

See also Irrigation: Water
Hydride rocket fuel, 279
Hydroe-Electric Board, North of Scotland. See North of Scotland

Board, South of Scotland. See South of Scotland

Power in France, 195

Power in France, 195
Power project for Brazil, 57
Power project, Dez (Iran), 642
Power project, Loch Awe, 451, 463
Power project, Trisuli, India financing

of, 803

— Power project, Volta River, Ghana Government's work on, 543

— Power scheme, Strathfarrar and Kilmorach, contracts for, 322

— Power station, Loch Glashan, contractors for, 579

— Project Greer's Ferry rejection of

Project, Greer's Ferry, rejection of English Electric's bid for turbines for, 171, 129, 272; turbine contract to Baldwin-

Lima-Hamilton Co., 456

— Project, Koyna, International Bank loan for, 707

- Project Snowy Mountains, progress of, 418; commission of, 776

418; commission of, 7/6
 Pump-storage schemes, hydraulic machinery for, 763
 Hydrocarbon oils, radiation effects on, 716
 Hydrodynamic gas bearings for grinding spindle, by Dr. S. A. Sheinberg and A. M. Kharitonov, 677
 Theory of chip formation in metal cutting, by M. M. Lamm, 444
 Hydrodynamics. See Ship resistance
 Hydroflo reciprocating oil-nowered number

Hydroflo reciprocating oil powered pump (Tangyes, Ltd.), 534 Hydrofoils, Seawings, for outboard motor boats

(Avica), 87 Hydrogen bubble chambers, by Dr. N. C. Ba ford, 367

- Coolers for High Marnham power station, 594 Distillation, low-temperatures, 204
Embrittlement of zirconium alloys, 138
Peroxide turbo-generator for X-15 upper

atmosphere research aircraft (General Electric Co. (US)), 361

Rocket fuel, 279

Sulphide removal with Bischoff tower purifiers, 588

Hydrok inetic drives account.

Hydrokinetic drives compared with hydrostatic,

Hydropropulsion unit in tug *Tom Jay*, 655 Hydrostatic drive compared with torque converter and torque-converter coupling, - Design and applications (Dowty), 654

Hydrothermal process for quartz production, 219

Hydrotron vapour blasting equipment (Meta-chemical Processes, Ltd.), 284 Hydrovane air compressors for dental drills (Alfred Bullows & Sons, Ltd.), 230 HyL process of direct reduction of iron ore into sponge iron (M. W. Kellogg), 159 Hynd, H., on work for elderly persons, 330 Hyperbolic paraboloids, 643. See Correction, 671

Roof for Commonwealth Institute, 804 Roof for Commonwealth Institute, 804
 Hypersonic aircraft. See Aircraft
 Flow Symposium, basic studies for hypersonic aircraft, by Dr. R. R. Jamison, 656
 Hyvacoilfil high vacuum drying and impregnation plant (Barlow-Whitney), 416
 Hyvarinen, L. P., on nonstationary shot noise (book), 586

I, x-Diagramme feuchter Luft, by M. Grubenmann (book), 746

A. See International Atomic Energy

Ibbotson, E., on iron and steel works buildings,

220 IBM United Kingdom, Ltd., IBM 7090 fas: data processing system, 318; IBM 628 magnetic core calculator, 698; IBM 610 automatic decimal point computer. 698; electric typewriter, 728. See also *International Business*Ice cream factory at Bridge Park (Lyons), 690

— Vending machines, 267

Ice-Matic, Ltd., ice cream and confectionery vending machines 267

— See also Refrigeration
Icebreaker Lenin, atomic-powered, trials on,

Nuclear-powered, for St. Lawrence Estuary,

ICI (Belgium) SA, aluminium piping for BR.2 reactor, 46

ICT. See International Computers and Tabulators, Ltd.
Ideal Home Exhibition, Royal Automobile Club. mobile office at. 393
Ides, Ltd., engine houses for Hawker Aircraft forcers at Squieze Gate. 215

Ides, Ltd., engine houses for Hawker Aircraft factory at Squires Gate, 215
Iengar, H. V. R., on India's 3rd 5-year plan, 130
IFORS. See International Federation of Operational Research Societies
Ignitron as switch in pulsing circuits, 608
Igranic Electric Co., Ltd., merger with Brookhirst Switchgear, 16

Ilford, Ltd., Azoflex document-copying ma-chine, 487

Illinois, surface waters, quality of, by T. E. Larson and B. O. Larson (book), 154

— University, engineering education at, 170

Illuminated acoustic ceiling, Siemens Ediswan Calotex, 589 Illuminating Engineering Society, lighting in corrosive, flammable and explosive situations (report) (book), 93; Golden Jubilee:

Sir Joseph Swan and development of the

Sir Joseph Swan and development of the electric lamp, by Dr. J. N. Aldington, 231. See also 326

Illumination. See Light; Lighting; Lamps
Impact of drops, photographic secord of, by Dr. R. A. Collacott, 440

— Machine for Naval Construction Research Establishment, 800

Imperial Chemical Industries, Ltd., gasifier-turbine-driven compressors for Wilton chemical plant, 49; appointments to board, 199; Diakon as uncoloured powder polymer, 210; treatment of water for industrial high-pressure boiler plant, 247; explosives (trade publication), 283; terypolymer, 210; treatment of water for industrial high-pressure boiler plant, 247; explosives (trade publication), 283; terylene fire hoses, 283; elastomer E372 shore hardness cable rubber, 309; silicone emulsion M401, 309; silicon plant, 309; Welvic pve drainpipes and roof gutters, 416; Maranyl nylon seals for buffers, 432; annual report, 456; retirement of Sir E. Smith from board, 488; Kynal 11S free-cutting aluminium alloy, 555; extrusion of fine-grain magnesium-aluminium sections, 555; rigid urethane foams, 556; rotary driers for fertiliser plant (Head Wrightson), 589; annual report, 604; filters of glass fibre and Terylene, 620; price reduction for Fluon ptfe, 692; staff exchange with GPO, 701; titanium, 746; phenol road tanker in AT nickel, 748; Fluon ptfe for flexible hoses, 780

College of Science and Technology, post-graduate course in nuclear power (booklet), 463; course in nuclear technology (chemical), 492

Impero Unificatore "lathe tooling set (A. A. Jones & Shipman, Ltd.) 230

"Impero Unificatore" lathe tooling set (A. A. Jones & Shipman, Ltd.), 230
Imports, Australia's policy for, 251

— Liquefied gas, discussion in Parliament on,

Marking of, discussion in Parliament on,

Motor cars, from Europe and US, 544 from Russia, increase in, 755 Sewing machines, from Ireland, 731

Sewing machines, from Ireland, 731
 Wood, statistics on, 363
 World statistics, 183
 Impregnation and drying plant, high vacuum, Hyvacoilfil (Barlow-Whitney), 416
 Impulse counters (trade publication), 650
 Incandescent Heat Co., Ltd., manufacturing rights agreement with Swenson Evaporator Co., 423; gas-fired furnace (trade publication), 443; independently-fired cupola blast heater, 722
 Incentives in huilding industry (report), 73

Incentives in building industry (report), 73 Income, engineers', 377

— Tax and Budget, 418

Tax and Budget, 418
Guide to (book), 162
Recommendations for budget on, 162
See also Pay; Salary; Wage
Incorporated Plant Engineers, new style of, 324
Sales Managers' Association, price reduction conference (Torquay), 435
Independent Television Authority, contract to Southern Television Ltd., for programmes from Dover, 480

from Dover, 480
Index to nuclear science abstracts, 745
— to Transactions of Institute of Welding, and Welding Research Supplement 1938-

India, atomic energy research activities, 301

— Power station for. Dr. H. J. Bhabha on,

Reactors, 80 Cement industry in, 209 Development plans and problems, 130

Electrical machinery and equipment market, English language in, 169
Financing of Trisuli hydroelectric power project, 803

Formation of ACC-Vickers-Babcock, Ltd., for joint projects, 231

National laboratories and institutes, 300

 Road construction programme, 543
 Development plan, 130
 Science policy of, 300
 Scientific and industrial research in, by V. S. Swaninathan, 300 - Steelworks projects, 791 - Technical education in, 302 - Vickers Ltd.'s activities in, 209

Indian Institute of Science, progress and activities of, 130

 of Technology, new and old buildings of, 300, 355 Railway Board, contract to British Insulated

Callender's Cables, Ltd., for overhead equipment, 177

equipment, 177
Indicator, flow, sight (Rhodes), 569
— Load (trade publication), 802
— Motor car, working party on, 544
— Multi-switch for checking temperatures (Ad. Auriema, Inc.), 455
— Oil velocity, miniature, by A. J. S. Baker, R. Tourret, and J. T. Jones, 82
Induction furnaces. See Furnace,
— Vacuum. See Furnace
— Heater. See Heater
— Melting, vacuum, 627
— Motor. See Motor, electric
— Ramming of reciprocating engines, by Dr. T. J. Williams, 370
Industrial administration, courses on, 385

T. J. Williams, 370
Industrial administration, courses on, 385

— Co-Partnership Association, appointment of Sir A. Fleck as president, 331

— Design. See Design

— Designer. See Designer
Industrial Drives, Ltd., Sextet auto-manual pulley for control of Thermotex glueing machine, 685

— Engineers reference book (book), 778

Engineers reference book (book), 778
Estate at Whitstable, 643
Industrial Hydraulics, Ltd., KeelaTite tube

coupling, 487

— Injuries Act, investigation on benefit for

teeth erosion by acid under, 733 Law, by H. Samuels (review), 376 Management Center (New York), annual packaging training conference, 177

Industrial Plant Review, Henry Simon, Ltd., 801 Industrial Psychology, National Institute of.

See National Institute

Industrial relations, looking at (booklet), 170

Revolution, 520 Training Council, 693

Training Council, 693
Travel, inter-factory visits organisation, 235
Trends survey by FBI, 451
Welfare Society, Successful Suggestion
Schemes (booklet). See LETTERS, 3, 67, 99, 131, 132, 163, 195, 227, 259, 291. See also Vol. 186; weekend conference for foremen and shop stewards, 105; house magazines conference, 364; Suggestion Scheme Group, 452; conference on suggestion schemes, 701

Industry, application of standards to, conference on, 781

— and commerce, legal aspects of, by W. F. Frank (review), 376

— Distribution of. See Distribution

— Voluntary work for, 321
Inertia blocks, concrete, for air compressor foundations, 214-215
Inertial guidance system for X-15 upper Inertial guidance system for X-15 upper atmosphere research aircraft (Sperry), 362 — Navigation in solar system, by D. J. Cash-

Infinite Persistence Solarscope oscilloscope

(Solartron), 70 Information Bureau, Petroleum. See Petroleum

Departments, industrial, 519 Flow of, problems of (supplement), 519 Industrial (supplement), 519 for management direction in 1960's (supplement), 516

Service for electronics engineer, 185
for radio engineer, 185
Stimulus (supplement), 519

Technical, course on presentation of, 185
Regional centres of DSIR, 672

Infra-red absorption bands, intensity of (bibliography), by R. G. Gillis, 713
Ingersoll-Rand Co., Ltd., general-purpose air-driven hand drill, 101
Ingots, continuous casting, in Russia, 797 Interlocking alum um, Alcan (Aluminium Union, Ltd.), 183

Injection moulding materials (trade publication), 283 Inland Waterways Redevelopment Committee, canal improvements, 776

canal improvements, 776

White Paper on, 290

See also Canal; River, etc.

Insignia Award in Technology, 727 Insley (London), Ltd., Nadella needle and roller bearings for cam followers (trade publication), 554
Inspection lamp, "Probe-Lite," for small orifices (Morris and Ingram), 4

 Operator control in, 811
 Ultrasonic, See *Ultrasonic*Inspectors, selection and training of, conference on, 125 Institute of Aeronautical Sciences, American.

See American Institute of Business Administration, proposed activities of, 353
— of Directors, 259; Isotopes at Work (publication), 395

of Experimental Psychology, work on musical pitch, 695 of High Speed Mechanics (Tohoku Univer-

of High Speed Mechanics (Tohoku University), activities of (report), 93
 of Marine Engineers, boiler refractories, by W. McClimont, H. M. Richardson and B. Taylor, 619
 of Metals, symposium on powder metallurgy of ceramic-metal materials, 90; symposium on vacancies and other point defects in metals and alloys (book), 475
 of Physics, Stress Analysis Group overseas

of Physics, Stress Analysis Group overseas meeting (Delfdt), 482; revised edition of notes for authors, 801 of Road Transport Engineers, improvements in omnibus design and operation, by R.

of Scientific Information, change of name,

- and Technical Information of China, new title for Institute of Scientific Information, 649

f Welding, index to Transactions and Welding Research Supplement, 1938-53,

Institutions, abbreviations of, 501

of Chemical Engineers: feed water and boiler water standards in the Central Electricity Board, by R. L. L. Rees and F. J. R. Taylor, 247; treatment of water for an industrial high pressure boiler plant, by J. Arthurs, J. A. Robins, and T. B. Whitefoot, 247; Regulations for the Admission of Student, Graduate and Corporate Members, and for the Examination of the Institution (booklet), 429; tion of the Institution (booklet), 429: scheme for degree course in chemical engineering, 757; symposium on instrumentation and computation in process development and plant design, 783

development and plant design, 783 of Civil Engineers, town roads for today and tomorrow (exhibition), 45; Victoria Tube project, by F. S. P. Turner, 193. See LETTER, 227; Mining Subsidence (report), 579; research into road construction, by J. M. Fisher, Dr. A. R. Lee, and Dr. R. S. Millard, 671; amalgamation with kindred societies, remarks on, by Prof. A. J. Sutton Pippard, 707

Prof. A. J. Sutton Pippard, 707 of Electrical Engineers: subscriber trunk dialling, by D. A. Barron, 160; Radio and Telecommunication Section renamed Electronics and Communications Section, 270; meeting on Women in Engineering, 489; design of automatic sensitivity control for new subscriber telephone set, by F. Williams and F. A. Wilson, 512; new Post Office 700-Type telephone, by F. E. Williams and F. C. Carter, 512; position control of massive objects, by A. Tustin and others (review), 713; International Convention of Transistors and Associated Semiconductor Devices, 741; electrical uses of atomic spin, by G. Phillips, 743 of Engineers (Australia), new publications,

Institution of Engineers and Shipbuilders in Scotland, 1st Hugh Macmillan Memorial

Institution of Engineers and Shipbuilders in Scotland, 1st Hugh Macmillan Memorial Lecture onplace of technologist in management, by Viscount Simon, 207

of Heating and Ventilating Engineers, off-peak floor heating, by H. H. Bruce, 592. See Letter, 663

of Highways Engineers, examination for diploma in traffic engineering, 397

of Mechanical Engineering, 397

of Mechanical Engineers, Journal of Mechanical Engineering Science (new publication), 93; Automobile Division: Standards in the motor industry, by E. Woodbridge, 104; properties of materials at high rates of strain (book), 502

of Naval Architects, further study of ship losses, by C. V. Manley, 386; container ships, by D. A. Argyriadis, 451

of Plant Engineers, new style of, 324; annual dinner, 331

of Production Engineers, standards engineering group proposal, 457; Annual Conference on Problems of Aircraft Production (Southampton): recommendations on supersonic airliners, 566; productivity in food industry, by M. Bogod, 690; conference on application of standards to industry. 781

of Professional Civil Servants, comment on General Secretary's remarks on pay claim by air traffic control officers and pay offer to Civil Service clerks, 73; Annual Delegate Conference: Remarks by S. Mayne, 726

of the Rubber Industry, formation of new section in South Africa, 228

of Structural Engineers, conditions of Maitland Lecture, 98; Maitland Lecture on large-span suspension bridges, by O. A. Kerensky, 190; Maitland Silver Medal, 190; annual dinner, 495

of Water Engineers, emergency methods for closing breaches in flood defences, by M. Nixon, 609; presidential address on water engineers, by D. Whiteley, 759

Instruction system, audio, AIMO, 786

Instruments (trade publications), 618, 802

Instruction system, audio, AIMO, 786 Instruments (trade publications), 618, 802

Airborne, anti-vibration mounting for, 373 British, directory and buyers' guide (review), 649

Oth Cathode-ray tube using helical post-deflection acceleration (Mullard), 88

Instrument Construction, translation of Russian journal, 681

Instruments, electronic, for factory processes, 524

524

— in factory processes, 524

— Inquiry service of BSIRA, 392. See

LETTER, 451

— Landing system for Elisabethville and
Leopoldville airports (Pye), 604

— — System for overseas airports (Pye), 604

— Monitoring, for process control, 783

— Pointer position for desired value at centre
of scale (Cambridge Instrument), 69

— for radiation measurement, 236

— Scientific, Manufacturers' Association. See

Scientific

— Research Association. British. See

- Research Association, British.

British Scientific Instrument

Servicing (trade publication), 474

Instrument Screw Co., Ltd., Rosan permanently locked studs and inserts, 557

for simulating delays for analogue computers (Elliott Bros. (London), Ltd.), 230

Switch (W. G. Pye), 70

Technology, Society of. See Society

Unit for gravimetric flue-gas sampling apparatus, 287

See also International Instruments, Electronics and Automation Exhibition

Instrumentation, atomic reactor, 687
— Reactors, course on, 80
— Reactor NEPTUNE, 675
— and computation in process development and plant design, symposium, 783
— Control, exhibits at Engineering Exhibition, 491

- for Dounreay fast breeder reactor (CJB), 491 - for DR3 reactor (Riso) (Ekco), 462 - as engineering discipline, by J. F. Coales, 790

190
for nuclear power stations, by Dr. D. Taylor, 750
Qualitative and quantitative. Vol. I of materials testing handbook, by E. Siebel and N. Ludwig (review), 553
for X-15 upper atmosphere research aircraft, 362

Insulated cables, aluminium for (booklet), 780

Insulating sections, Stilag, for underground pipework, 579
Insulation Act, Thermal, 525
— Calcium silicate, Newtherm (Newalls Insulation), 503

— DR NS for magnet sector plate (Code) DRNS, for magnet sector plates (Sankey),

755

Electrical, silicones in, by J. H. Davies, 309

Foamed glass, Stay-Dry, for piping (Pittsburgh Corning Corp.), 183

Glass fibre (trade publication). 185

Heat, exhibits at Factory Equipment Exhibition, 452

Paper mica, Samica (trade publication), 746

Sound, exhibits at Factory Equipment Exhibition, 452

with sprayed foams, 556

Testers, Metrowatt (Metrix), 634

Insurance in atomic energy, State settlement of excess claims, 240

for teeth erosion by acid, 733

Integra approach warning device on Rhodesia

Integra approach warning device on Rhodesia locomotives, 52

locomotives, 52
Integral equations, by F. Smithies (book), 184
Inter-Continental Office Equipment, Ltd.,
device for identifying keys, 389
Interference between power systems and telecommunication lines, by H. R. J. Klewe
(review), 745
Interfirm Comparison, Centre for, 662
Interlanguage Dictionaries Publishing Corp.,
glossary on optics and spectroscopy, 475
Intermatic master station for internal telephone systems (Siemens Edison Swan), 698

Internal-combustion engine. See Engine. See also Aircraft engine; Motor-car engine; Motor-boat; Tractor; Turbine, gas
International Academy of Management, formation and election of members of, 701
International Aeradio, Ltd., control room equipment for London heliport, 543

— Atomic Energy Agency, appointments to scientific advisory committee, 176

— Automatic vending machine exhibition and convention (London), 325

— Bank of Reconstruction and Development, loan for Brazil hydroelectric project, 57; loan to India for Koyna hydroelectric project, 707; road construction in Western Iran, 775; mission to Tanganyika, 776
International Business Machines, computers for "Management Decision Game," 65. See also IBM
International Combustion, Ltd., extensions at Derby works for large scale fabrication, 723

— Commission on Radiological Protection, history and activities of 326

723
 Commission on Radiological Protection, history and activities of, 236
 Computer Centra, activities of, 21
 International Computers and Tabulators, Ltd., formation and share capital of, 103; formation of, 167; computors in production control 526; computers at Business Efficiency Exhibition, 698
 Council for Building Research and Documentation (CIB), working party on timber roof construction, 495
 Federation of Operational Research Socie-

Federation of Operational Research Socie-

ties, formation and objects of, 34
International Finance Corp., investment in Brazil cement plant, 57; investment in Kirloskar Oil Engines, Ltd., 572; work of engineer adviser to, by Dr. W. J. Jenkins, 790

Instruments, Electronics and Automation Exhibition (1960), space-selling tour of Europe for, 435

Labour Conference (Geneva), preliminary note on, 765

note on, 765
 Organisation, report of textile committee of, 77; British action under Technical Assistance Programme of, 699; Technical Meeting on Fishery Cooperatives, 790
 Ladies' Garment Workers' Union, 20-page supplement in New York Times, 765
 Manufacturing organisations, 391
 Organisation for Standardisation, standards for the motor industry, 104

for the motor industry, 104

— yearbook, 1958-9, 283

— Packaging Exhibition (Amsterdam), preliminary notice, 369

Radio tube encyclopaedia, 1958-1959, by B. B. Babani (review), 310

Repertory of Computation Laboratories, 801

801

Road Federation, heavy-duty roads for Africa, 671

Samples Fair, radioisotopes exhibits, 563

Scientific Research Exhibition, preliminary notice, 84

International Synthetic Rubber Co., synthetic rubber production at Fawley, 25

System of Units, by E. Schmidt, 695

Interplanetary Society, British. See British Interpolation over cartesian grid, tables for, by H. E. Salzer and G. M. Kimbro (book), 586

Interstitial patterns, by A. J. C. Hall and J. G. Hayes (book), 586
Interviews, user, 528
Interviewing, training for, 48
Intrusion Prepakt Concrete for repairs to Cononish Viaduct, 642
Inventions automotive of Ettore Bugatti by

Inventions, automotive, of Ettore Bugatti, by H. G. Conway, 200, 207

— Competition, Freeman, Taylor Machines,

See also Patents Investment allowances, restoration in Budget,

482

— Bank, European. See European

— in Europe, by US, 791

— Overseas, inquiry for improving statistics availability, 672

— US, development of, 790

— US incentive tax Bill, 724

— Position and prospects of, 258

— in Post Office telephone service, 699

— Private, indicators of outlook for, 387

— Projects, European Economic Community report on, 483

— Prospects in Australia, 322

— in sterling area, UK, 531

— Trusts in Europe, 355, 727

— US, in South America, prospects of, 354
Ions, "runaway," in Zeta, 205
Ionisation chamber, neutron-sensitive, 751
Ionosphere, lunar, nature of, 333
Iran development programme, 642

Ionosphere, lunar, nature of, 333
Iran development programme, 642

— Western, road construction, 775
Iranian Oil Exploration & Producing Co. survey by Hunting Aerosurveys Ltd. for, 804

Ireland, bicycle manufacture in, Tube Invest-

— Sewing machine imports from, 731

Iron alloy, Kanthal, as atomic reactor canning material, 139

— Cast, in bridge construction, 538

— Cast, in bridge construction, 538

Cast, in oringe construction, 336
 Cylinders and prisms, failure in compression of, 799
 Castings. See Castings
 Council, Joint. See Joint
 Foundry industry, position and prospects of, 359
 Ore See Ore

Ore. See Ore

Pig, output of, 694
Sponge. See Sponge iron
and Steel Board, Sir C. Musgrave appointed chairman to, 167

— Engineers Group. See Iron and Steel

— Federation, British. See British
— Industry, crane safety in (report), 235
— industry, German, deconcentration of,

nationalisation of, Colin Industry,

Hurry's survey on, 194

— Industry, position and prospects of, 7,

Iron and steel industry, Russia, destruction, recovery and achievements of, 797

recovery and achievements of, 797

— Institute, symposium on powder metallurgy of ceramic-metal materials, 90; Iron and Steel Engineers Group Meeting on Bulk Handling of Iron Ore: Survey of world iron ore situation, by C. R. Wheeler, 593; ore handling at Seven Islands, Quebec, by D. H. Sharp, 593; unloading in USA and Canada, by Dr. H. R. Mills, 593; Royal Netherlands Blast Furnaces and Steelworks, Ijmuiden, 593; Muller-Hanna ore-handling installation, by F. D. Vines. ore-handling installation, by F. D. Vines, 593; Margam Works, by J. E. Robson, 593; East Moors Works, by T. Jenkins, 593; transportation and handling in Britain, by T. V. Nicholson, 593

— Research Association, British. See

Research Association, British. See British
Works buildings, architectural aspects of, by F. Gibberd, 221
Works, buildings for, conference on (BISRA), 220
Works buildings at Corby Works, by T. E. Clements and J. T. E. Williams, 220
Works buildings, by E. Ibbotson, 220
Works buildings, foundations to, by W. S. Atkins, 220
Works buildings in France, framework of, by A. Delcamp, 221
Works buildings in Germany, by Dr. G. F. Drath, 221
Works buildings, research and develop-

G. F. Drath, 221

Works buildings, research and development in, by Dr. J. S. Terrington, D. Buchanan and P. D. Thompson, 221

Works buildings, superstructures to, by K. F. Geesin, 220

Works, siting of, by F. Gibberd, 221

Works structures, research and development in, by Dr. J. S. Terrington, D. Buchanan and P. D. Thompson, 22! and steelmaking, oxygen in, in Russia, 797

Wrought, in bridge construction, 538
See also Cast iron; Steel; Pig iron: Metallurgy

lurgy
Ironex welding electrods (Murex), 556
Ironmonger diary and hardware buyers guide (review), 310

— National Federation of. See National

Federation

Ironmongery trade, new thinking plea for, 787
Ironwork, structural. See Bridge; Floor;
Column: Roof; Steelwork; Structure
Iroquois turbojet aircraft engine, development
of (Orenda), 26

Irradiation, atomic fuel element behaviour under, 238 Damage of metals, 238 Laboratory, Metropolitan-Vickers, 491 Reactions taking place under, 238 Tests on beryllium, 139

- 1 fests on beryfrium, 159
- of thorium, 109
- of uranium, effects of, 107
- See also Radiation

Irradiator, gamma process development,
USAEC interest in, 395

Irrigation, centrifugal pump for (Wright Rain),
705

Equipment for frost protection of crops (Wright Rain), 705
Mechanised equipment (Wright Rain), 704

Mechanised equipment (Wright Rain), 704

— Scheme, Dez (Iran), 642

— Sprinkler, 704

— by Taunsa Barrage, 473
Isaac Newton telescope, for Royal Observatory, parallax work with, 341
Isaacson, E. de St. Q., rock pressure in mines (book), 475
Isbrantsen Co., tanker powered by gas-cooled reactor, 547
Islam, S., on universal language, 195
Isle of Sheppey, coastal erosion, 392
Isomantle electric surface heaters for grease tanks, 382
Isopad Ltd., Isomantle electric surface heaters for grease tanks, 382; development of electrical surface heaters, 522
Isotope, Boron 10, separation of, 204
Isotope Developments Ltd., type 1700 Scaler counting equipment, 102; stand at Leipzig Fair, 492

— of light elements, separation of, 203

— Overen separation of, 204

of light elements, separation of, 203
Oxygen, separation of, 204
School, Harwell, distribution of science branches at, 80

Separation, consolidated report on, by F. I. Hurley, 202

- by diffusion in gas stream, 203

- Uranium, diffusion plants for separation of,

Separation methods, 202

Isotype Institute Ltd., director of graphical signs and symbols, 343See also Radioisotope Ispra reactor (Italy), operation commenced, 462

sel, atomic energy in, 46
See also Technion: Weizmann Institute
RE. See International Scientific Research ISRE. Exhibition

Italian Navy, swimming-pool reactor for, 675 Italy, atomic energy in, 46 Energy consortia in, 46 Reactors in, 46

Electrical engineering industry, 291
 Profitability of different sized firms, 194
 Southern, petrochemical plant project at Brindisi, 509

— See also Southern Italy Development Fund Izzard, A., on vending machines, 451

## J

JACK, hydraulic screw, for hatches on cargo liner Gudrun Bakke (Götaverken), 688
Jackman, J. W., & Co., Ltd., Blo-Flex automatic moulding machine, 722
Jacob, Sir I., on Television in the Public Service (booklet), 457
Jaeger, L. G., analysis of grid frameworks and related structures (book), 154
Jaffrey, W. G., on dust and grit in flue gases, 285
Jaguar Cars Ltd., export sales progress by, 177
Jakhau lighthouse, equipment for (Stone-Chance), 681

Chance), 681

Jamison, Dr. R. R., on hypothetical two-stage "pickaback" aircraft with speed of Mach 7, 656

Jane's All the World's Aircraft, 1958-59, by L. Bridgman (review), 474

— Fighting Ships, 1958-59, by R. V. B. Blackman (review), 474

Jansen type on lead tan change (Transformers)

Jansen type on-load tap changer (Transformers (Watford)), 326

(Watford)), 326

Japan, atomic energy in, 46

— Energy consortia in, 46, 303

— Energy group formed, 427

Japan Atomic Power Co., negotiations with GEC for nuclear power station, 269

— Power station for, 427

— Power station for, contract negotiations for, 206

— Power station details of 492

Power station, details of, 492
Power station, earthquake safety pre-

Power station, eartinguake safety precautions, 463
Power station, fuel for, 427
Reactors, 46, 303
Reactor, assismic reinforcement for, 79
Reactor project of Kyushu Co., 269
Motor-car sales in U.S., 328
Shiphyilding industry, 41, 43

Motor-car sales in U.S., 328
 Shipbuilding industry, 41-43
 Trade with, 435
 Japanese Atomic Energy Research Institute, HTGC reactor experiment, 463
 Jargon, G. M. Boyd on, 259
 Jarrow Metal Industries, history and 21st anniversary of, 764
 Jarrow Tube Works, history and 21st anniversary of 764

JASON atomic reactor for training and research (Hawker Siddeley), 303, 461, 491
JEEP reactor (Norway), 80
Jeffreys, Rees, Road Fund. See Rees Jeffreys
Jegri lighthouse, equipment for (Stone-Chance),
681

Jenbach diesel driven mobile air compressor with air cooling (Chamberlain Plant Ltd.), 728

728

Two-stroke oil engines, comparison of 4-cylinder and single-cylinder, by Prof. S. J. Davies, 404

Jenkins, H. F. L., on specifications for rubber products, 476

Jenkins, J. A., univalent functions and conformal mapping (book), 184

Jenkins, T., on ore handling at East Moors Works, 593

Jenkins, Dr. W. J., engineer adviser to International Finance Corp., 790

Jeppesen, A., on durability and maintenance of concrete structures on Danish railways, 384

Jervolino, B., on fishermen's cooperatives, 790

Jervolino, B., on fishermen's cooperatives, 790 Jessop-Saville Ltd., vacuum melting of alloy steel, 626

Jets, exhaust, rocket, by E. T. B. Smith, 36

— Propulsion, high-speed aerodynamics and, by H. W. Emmons (review), 713

Jet Propulsion renamed ARS Journal, 343

Jig boring machine. See Boring machine

— and fixture details and units, by H. W. Hardy (book), 475

— Saw, Black & Decker U. 10, 224

— — Pacera (W. J. Meddings Ltd.), 729

Job ,fitting to the worker (book), 746

— to the worker, EPA conference, 365

Joderell Bank radio telescope, discussion in

Johns Hopkins University, linear programming and associated techniques, by V. Riley and S. I. Gass (review). 10

Johnson, C. H. (machinery), Ltd., One: 20 diesel dumper with Powergrip timing belt 589

Johnson Matthey & Co., Ltd., Platinax II platinum magnetic alloy, 183; Mallory 1000 alloy for watches, 345; interest acquired in Metalli Preziosi, 604; Mallory No-Chat tungsten based shank material, 620; platinum chemical distillation plant, 747

Johnson & Starley, Ltd., flame/air heat exchanger, 452

Joints, bellows (trade publication), 554

Joints, bellows (trade publication), 554
 Boxes, plastics, 588
 Iron Council, iron foundry statistics, 359
 Nuclear Research Institute (Dubna), spiral ridge cyclotron, 772
 Rigid, in long rails, Bondarc resin-based adhesive for, 32
 Jointings, Lascarflon, in asbestos and pife (Beldam Asbestos), 503
 Loists intermediate span woodfilled (Metal Loists)

(Beldam Asbestos), 503
Joists, intermediate span, woodfilled (Metal Sections, Ltd.), 776
Jones, A. A., & Shipman, Ltd., "Impero Unificatore" iathe tooling set, 230; new showrooms of, 324; high precision cylindrical grinding machine, 324
Jones, E. H., Ltd., stainless steel for road tankers, 748
Jones, J. T., on miniature oil velocity indicator

Jones, J. T., on miniature oil velocity indicator, Jones, K. W. J., on whole company as sales organisation, 511

es mobile cranes, hydraulic grabs for handling coal (George Cohen 600 Group)

292
— Crane, KL12-20M (George Cohen 600 Group), 532
Jones & Stevens, Ltd., RZR laboratory stirrer, 454
Jones, Sir W. Benton, on position and prospects of steel industry, 135; on United Steel Cos., Ltd., 423

Jordan, J., on analysis of coal ash, 64 Joscelene, R., on avoiding trouble in selling gods overseas, 457

gods overseas, 457
Joseph, Sir K., on work for elderly persons, 330
Journal of Mechanical Engineering Science, new
publication of I.Mech.E., 93
Journal of Nuclear Materials, new quarterly, 377
Journal of Research, 681
Journals, science, British, foreign distribution
of, 330
Secolar Regarium

Of, 330

— See also Bearings
Journalism, Plain Words on, 758
Jowitt, Earl, Dictionary of English Law, 649
JRR-1 to 3 atomic reactors in Japan, 46
Jubilee Clipdriver screwdriver for hose clips
(L. Robinson & Co.), 697

Ludge A. W. gas turbings for aircraft (review) Judge, A. W., gas turbines for aircraft (review), 343

Judgelite vitreous enamelled aluninium, 587
Judgment of colleagues, Plain Words on, 450
Jugoslavia. See Yugoslavia
Jülich, atomic reactor at, 206
Junction transistor and its applications, by
E. Wolfendale (review), 801
Junghans high-precision dial gauges (Rubert & Co.), 358
Junior Institution of Engineers, 75th anniversary, 637
Juno II rocket for launching of Pioneer IV space probe, 360

space probe, 360 Space probe vehicle, 388

Jupiter engine for Juno II space probe vehicle,

— Missile, monkeys in, 726, 727

"Just price" policy of Servomex Controls, Ltd., 3. See also Vol. 186

Juvenile hormone, research on, 796

### K

KAISER Engineers-ACF Industries gas-cooled reactor programme, 734
Kaiser Engineers & Contractors Inc., Volta River project, 804
Kaiser Industries. Henry J., Volta River project. 543

project, 543
Kaiser, J. F., analytical design of linear feed-back controls (review), 252
Kalla-Bishop, P. M., on standard symbols, 631-632

Kanigan nickel-phosphorus alloy coating process, 555

process, 555
Kanthal iron alloys as atomic reactor canning material, 139
Kapp, Prof. R. O., on theory of planetary system. 196; biographical note on, 270; on origin of planetary system, 257, 270, 323-324
Karbanda, O. P., on nomograms for chemical engineers (book), 154
Karger, D. W., engineered work measurement (review), 282
Kariba Dam, strike of employees at, 428
— Gorge scheme, financing of, 530

Gorge scheme, financing of, 530

Karpenko, G. V., effect of surface-active medium on deformation of metals (book), 502

Katamar inboard runabout motor boat, 86 Kauderer, H., non-linear mechanics (review),

475
Kay, J., krypton 85 light source, 492
Kay, Prof. J. M., lecture tour of, 269
Kaylor & Pick, structural engineers for Heinz factory at Kitt Green, 578
Kazantsev, Prof., atomic explosion theory, 637
KDG Instruments, Ltd., transducers (trade publication), 818
Kearns, H. W., & Co., Ltd., universal horizontal boring, surfacing, drilling, tapping and screwcutting machine with two-dimensional electronic coordinate setting, 561-562

Kearsey, H. E., review of engineered work measurement, 282
Kearton, W. J., on steam turbine theory and practice (review), 745

KeelaTite tube coupling (Industrial Hydrau-lics, Ltd.), 487

Keela Tite tube coupling (Industrial Hydraulics, Ltd.), 487
Keelavite Hydraulics, Ltd., hydraulic steering unit for small vessels, 487
Keeton, Sons & Co., Ltd., bored bars (trade publication), 746
Kellogg International Corp., gasifier-turbine-driven compressors for ICI (Wilton), 49
Kellogg, M. W., Co. (New York), HyL process of direct reduction of iron ore into sponge iron, 159
Keily, Dr. M. J., retirement from Bell Telephone Laboratories, 549
Kelvin & Hughes, Ltd., meter for water flow speed and direction, 70; collaboration with Sperry Gyroscope Co., 135; development of echo-sounders and sounding techniques, 522; ultrasonic crack detector for valve manifold blocks (Towler Bros.) 626; components (trade publication), 650; solar radio sextant, 744
Kelvin & Hughes (Industrial), order from Czechoslovakia, 312
Kelvin & Hughes (Marine), Ltd., survey of Sizewell atomic power station, 240; unit system for marine radar, 262
Kempe's Engineers' Year Book. Vols. I and II, 1959, by C. E. Prockter and B. W. Pendred (review), 649
Kenilworth Manufacturing Co., Ltd., readymixed plastics for tooling, 588
Kennedy, W. C., heavy-duty roads for Africa, 671
Kennedy-Ervin Bill on US trade unions, 331

Kennedy-Ervin Bill on US trade unions, 331 Kerensky, O. A., on large-span suspension bridges, 190 Kestin, J., review of Engineering Thermo-

Kestin, J., review of Engineering Thermodynamics; Work and Heat Transfer, 442; review of Introduction to Thermodynamics and Heat Transfer, 442 Kestner Golden Jubilee Book (book), 93 Keys, identifying device (Inter-Continental Office Equipment, Ltd.), 389
Keyswitch Co., relay calculator (trade publication), 650

Keyswitch Co., relay calculator (trade publication), 650
Kharitonov, A. M., on hydrodynamic gas bearings, 677
Khrushchev, N., review of Soviet economy, 194
Khuzestan capital works progress, 642
Kiefler, R., on silicides and borides, 90
Kieselguhr for filtration (Charles H. Windschung), 144, 682

Kieselguhr for filtration (Charles H. Windschuegl, Ltd.), 683
Kiewit, Peter, Sons' Co., Hallam atomic power facility, 425
Kilmister, C. W., special relativity for physicists (review), 410
Kilmorach and Strathfarrar hydro-electric scheme, contract for, 322
Kimber & Lovegrove, Ltd., Silver Flame oilfred domestic boiler, 96
Kimbro, G. M., on interpolation over cartesian grid (book), 586
Kinetheodolites, satellite observation by, 440

Kinetheodolites, satellite observation by, 440 King, Geo. W., Ltd., Marvex and Mammoth chain pulley blocks with flameproof electrical equipment, 809

King, Prof. J. W. H., on accelerated curing tests on concrete. See Letter, 759 King's Cross Station, Deccafax Visual Com-

munication System at, 659 Kingsbury, J. E., founder of Standard Tele-phones, 604

phones, 604
Kingston Bypass, dual carriageways for, 707
Kirchmayer, L. K., economic operation of power systems (book), 618
Kirkaldy flats, off-peak floor heating in, 592
Kirloskar Oil Engines, Ltd., International Finance Corp.'s investment in, 572; history and activities of, 572
Kirrage, T. V., in Universal Pattern and Precision Co. dispute, 105
Kirsch, H., furnace slags textbook (review), 554
Kitchen & Wade, Ltd., tool for machining cast iron pipe flanges, 295
Kiveton Park Colliery, Roofmaster supports for goaf debris, 717
Klahr, C. N., on temperature-zoned reactor, 463

Kleen, W. J., electronics of microwave valves (review), 184
Kleinlogel, A., on rigid frame formulas (book), 154

(book), 154
Klewe, H. R. J., interference between power systems and telecomminication lines (review), 745
KLG Sparking Plugs, Ltd., Training Within Industry for Supervisors at, 382; glow plug for diesel engines, 496
Klystron 3-cavity KLS2 (Marconi Osram), 583
— Development by Ferranti, Ltd., 135
— Manufacture by Raytheon Corp. under Ferranti licence, 135
Knap Mills Inc., shielding manufacture rights in UK, 303
Knitmesh, Ltd., separators (trade publication).

Knitmesh, Ltd., separators (trade publication),

283
"Knockers" for fertiliser driers, 589
Knowles, J. D., on electrical exports, 418
Koepe winder towers, at Rufford Colliery, 338
Kolb horizontal drilling machines (Stanley
Howard, Ltd.), 730
Kolibric twin ram-jet helicopter, 88
Koppen, Prof. O., STOL aircraft, 264
Koselev, V., cast tools (book), 475
Koyna hydroelectric project, International
Bank loan for, 707
Kozyrev, Dr. N. A., discovery of carbon
vapour on the moon, 332
Krangede, construction of atomic power
station, 80
Kraus & Naimer, cam-operated rotary
Style C-switches, 21
Kristjonsson, H., modern fishing gear of the
world (book), 650
Krivoi Rog iron ore deposits, 797

Krivoi Rog iron ore deposits, 797
Krupp, Friedrich, comment on activities under
ECSC, 264; deconcentration of, 699;
annual report, 732

Annual report, 732

Krypton in lunar atmosphere, 333

— 85, cost of, 499

— Increased availability of, 492

— Radioactive light source, 492, 497

— Radioactive light sources, design of, 498

— Radioactive light sources, equipment required for, 498

— Radioactive light sources, performance

- Radioactive light sources, performance of, 498

of. 498

— -- Separation and purification, 492

Kubitschek, Dr. H. E., on radiation and mutations in living tissues, 537

Kuniform copper alloy strip, 555

Kuterlex plastics-covered copper tubes, 556

Kuwait Oil Co., packaged water chilling sets for Ahmadi Hospital (York Shipley), 781

Kynal 11S free cutting aluminium alloy, 555

Kyushu Electric Power Co., atomic reactor project, 269

### L

LABORATORIES at Berkeiey, CEGB, 367

— Computation, International Repertory of.

See International

Coil Spring Federation Research Organisation, 744

isation, 744

Elastomers research, of Du Pont Co. (United Kingdom), Ltd., 684

Electric locomotive testing at Willesden, 218

Hydraulic equipment testing (Plessey), 549

Irradiation, Metropolitan-Vickers, 491

Mechanical Engineering Research. See Mechanical Engineering

National, in India, 300

Osram Lamp Development, 85

Radiophysics (Sydney), equipment at, 121

Stirrer, RZR (Jones & Stevens), 454

See also National Engineering; National Physical

Labour in cargo ship loading and discharging, Conference, International (Geneva), 765

Disputes, position and prospects of, 457 Exchanges, international, 483 Management relations. See Management-

labour

— and National Service, Ministry of, Engineering Work for Boys (career booklet), 11; length of working life (booklet), 364; Training Within Industry for Supervisors at KLG Sparking Plugs, Ltd., 382; Professional Engineers (career booklet), 765 Organisation, International.

national Party, nationalisation proposals in engineering industry, 629

Shortage, skilled, in Africa, 170
Supply of, European Economic Community

- Supply of, European Economic Community report on, 483

Lacey, P. M. C., on LMFR power reactors, 313

Lacrinoid Products, Ltd., Handycan polyethylene container for liquids, 600

Ladders, roll-up, Easy-Roll (Bentall-Alley), 628

Ladies' Garment Workers' Union, International. See International Ladies'

Garment

Garment Laflamme, R. A., on digital terrain model, 751
Laing, John, & Son, Ltd, civil engineering
work at Berkeley atomic power station,
206; contract schedule for London-

Birmingham motorway, 525; annual report, 732; London-Birmingham motorway, 776

Laing, John, & Son (Canada), Ltd., contract for Queensbrough bridge across Fraser River, 391

Lake Maracaibo oilfields, Atlas 400 ton floating crane for, 595

Lamb, J., running and maintenance of marine diesel engine (book), 554

Laminates, glasscloth (trade publication), 746

Laminations in gear wheel rims, ultrasonic inspection for, 785

Lamm, M. M., on chip formation in metal cutting: hydrodynamic theory, 444

Lamp, development of, Sir Joseph Swan and, by Dr. J. N. Aldington, 231

Fittings, fluorescent, Taskmaster range of Flurolier, 198

Gas-discharge, life of ballasts for, by T. Hehenkamp, 32

Headlamps, vehicle, testing (book), 154

Incandescent, laboratory for development of (Osram), 85

Inspection, "Probe-Lite," for small orifices (Morris & Ingram), 4

Price reductions in, 251

Projector, with ellipsoidal reflector (Osram), 85

— Projector, with ellipsoidal reflector (Osram), 85

- Solution - Solution

Lampshade, plastics. Fildenex, 396
Lancashire Dynamo & Crypto, Ltd., electromechanical brakes (trade publication), 474
Lancaster, N., on steelworks structures, 220
Lancelec variable inductance transducer in escape from submerged aircraft tests, 278
Lanchester Memorial Lecture on aeroelasticity, by Prof. A. R. Collar, 17
Lancia, Applia and Elaminia motor car, 329

Lancia, Appia and Flaminia motor car, 329
Land works, digital terrain model computation
system for, 751
Landing, aircraft, disputes, 599
— in fog, 392, 763
— Automatic, by E. H. Bruce-Clayton, 656
— Disputes at airports, 599
— Instrument, for Elisabethville and Leopoldville airports (Pye), 604
— for overseas airports (Pye), 604 — for overseas airports (Pye), 604 — System, Pye, for Moscow airport, 755-756

Landis Machine-Maiden, Ltd., Maiden 2C/ST screwing and threading machine, 633; Maiden type A threading machine, 809
Lang, E. H., on damaging reactions in concrete, 483

crete, 483

Lang Pneumatic, Ltd., pneumatic calculator (trade publication), 93

Langdon, Dr. F. J., on lighting in drawing offices, 506; layout and equipment of drawing offices, 558

Language, English as universal technical, by Dr. E. Holmstrom, 168. See Letter, 195

— Translation by computers, by A. D. Booth, L. Brandwood and J. P. Cleave (review), 184

Universal, Pei plan for, 169 Lantern, post-top, for Birmingham inner ring road, 215

road, 215
Lapping attachment for milling machine (Alfred Herbert, Ltd.), 293
LAPRE-2 reactor (Los Alamos), criticality achieved, 492; purpose of, 492
Lapunov, Prof.. atomic explosion theory, 637
Lardge, H. E., on suggestion schemes, 195
Larke, W. M., on Junior Institution of Engineers, 637
Larmuth & Bulmer, Ltd., fixed bobbin stranding machine for electric cables, 623
Larson, B. O., on quality of surface waters in Illinois (book), 154
Larson, T. E., on quality of surface waters in

Larson, T. E., on quality of surface waters in Illinois (book), 154 Larynx, artificial, transistorised (Bell Telephone Laboratories), 788

Lascarflon packings and jointings in asbestos and ptfe (Beldam Asbestos), 503 Lathe, capstan, with screw cutting at cross slide (Murad), 532

- for seated operator (Dowding & Doll), 132

132

— Centre, 5 in. (Raglan Engineering), 729

— English pattern, Eclipse boring toolholders for (James Neill & Co.), 696

— Hydraulic copying, Mini-Kop (Myford Engineering), 533

— Spinning, Leifeld P1b 1200, 263

— Tooling set, "Impero Unificatore" (A. A. Jones & Shipman, Ltd.), 230

Latimer-Needham, C. H., on suggestion schemes, 227

Latin America, Aveling-Barford sales in, 812

— Gas liquefaction plans, 663

America, Aveling-Barford sales in, 812 Gas liquefaction plans, 663 Latina atomic power station, thermal rating of reactors, 367

Launch, motor. See Motor boat

Launching by flooding at Götaverken new yard at Arenda!, Sweden, 561

— Preparations for X-15 rocket ship, 678

Savannah, atomic-powered ship, 674 Laurence, Scott & Electromotors, Ltd., squirrel-cage electric motor for centrifugal pumps for Chapel Cross atomic power

station, 490

Law, coal mining, by J. Sinclair (review), 376

— and effects, physical, by C. F. Hix, Jr.,
and R. P. Alley (book), 746

— English, dictionary of, by Earl Jowitt, 649

— Industrial, by H. Samuels (review), 376

— on protection of industrial designs, 731

— See also Legal

Lawton, V. G., in Universal Pattern

See also Legal
 Lawton, V. G., in Universal Pattern and Precision Co. dispute, 105
 Layfield, F. H. B., review of Industrial law, 376; revie wof Coal mining law, 376; review of Legal aspects of industry and commerce,

Layton diaphragm pump (Henry Sykes, Ltd.), 697 I measuring machine, bench-mounting (Goulder), 664 Lead quota imposed by US for, 8

Zirconate transducer for ultrasonic flaw detector, 570
 Leading the World, BEAMA 48th anniversary

Leading the World, BEAMA 48th anniversary publication, 391
Leak detection (trade publication), 283
— Tracing in Martin aircraft fuel tanks, nitrous oxide gas for, 659
Leaning tower of Pisa, electropetrification, 73
Lectures, commemorative, Plain Words on, 98
— Theatre for Royal Aeronautical Society, 671
Ledlie Prize awarded to Prof. F. Roethlisberger, 796

Ledite Prize awarded to Prof. F. Roethlisberger, 796

Lee, Dr. A. R., on research into road construction, 671

Lee, Howl & Co., Ltd., pumps for North Approach of Blackwall Tunnel, 803

Lee, Dr. J. A. N., on relaxation methods for two-dimensional plate problems, 752

Lee-McCall stressing bars and jacks for stamp shop at Hawker Aircraft factory at Squires Gate, 214

— System of prestressing concrete, develop-

System of prestressing concrete, developments in (McCalls Macalloy, Ltd.), 610 c, lightweight support, for rock drills (Consolidated Pneumatic Tool Co., Ltd.), 230

Legal aspects of industry, and commerce, by W. F. Frank (review), 376

— of radiation injury, 237
— Status of Euratom, by M. Gaudet, 483
— See also Legal

Status of Euratom, by M. Gaudet, 483
See also Law
Le Grand Adsco, Ltd., soil tests for Heinz factory at Kitt Green, 577
Legris, J., aide-memoire martinenq des constructions navales (book), 311
Lehane, Mackenzie & Shand, Ltd., Doncaster bypass, 579; London-Birmingham motorway, 776
Lehigh University, resin-bonded adhesive for rigid joints in long rails, 32
Leicester, Lovell & Co., Ltd., Epophen Mould Seal for casting epoxide resins, 183; Resnit mouldable reinforced plastics sheet, 588
Leifeld spinning lathe, P1b 1200, 263

sheet, 588
Leifeld spinning lathe, P1b 1200, 263
Leipzig Fair, comment on, 596
— Isotope Developments, Ltd., at, 492
— Note on, 312
Lenin icebreaker vessel, atomic-powered, trials on 548

Lenin icebreaker vessel, atomic-powered, trials on. 548
Lenson Engineering Co., H-type mobile extending platform, 292
Leopoldville airport, instrument landing system (Pye), 604
Lerner Machine Co., Ltd., Thermotex machine for glueing cardboard cartons, 685
Les piles atomiques à neutrons 1 nt, by J. Maurin (book), 411
Letcher, J. S., Westinghouse scholarship award, 397
Lettenmeyer, L., atomic terminology (book).

Lettenmeyer, L., atomic terminology (book), 650

Levatron thermonuclear research apparatus, Level controller, Pneutronic (trade publica-

cation), 618
Self-adjusting (Cooke, Troughton & Simms and Hilger & Watts), 101. See Correction, 324

Levelling machines (Brenx Engineering), 390

— Plate, 6-roll (Bronx Engineering), 762
Levermatic soil consolidator (trade publication), 443
Levin, E., on timber roof structures (report), 579

Levin, Dr. N., work at AWRE, 765 Lewis & Duvivier, London heliport, 543 Lewis, J. Spedan, on John Lewis Partnership,

Lewis, John, Partnership, by J. Spedan Lewis,

Ley, Colbeck & Partners, lecture theatre for Royal Aeronautical Society, 671
Leyland Motors, Ltd., fuel consumption test equipment, 200; Firemaster fire engine, 265; position and prospects of, 296; library for employees, 378; price reductions for home market, 488; Albion Reiver haulage and tipper chassis, 634
Ley's Malleable Casting Co., Ltd., electric furnace equipment for annealing pearlitic malleable iron castings, 245
Libby, Dr. W. F., resignation from USAEC, 269
Library for employees at Leyland Motors,

Library for employees at Leyland Motors, Ltd., 378
Industrial use of (supplement), 519
National Lending, of Science and Technology, site for, at Thorp Arch, 123, 458
Public, service, structure of (White Paper), 270

Royal Institution, notes on, 29 Service for electronics engineer, 185
for radio engineer, 185
Special and Information Bureaux Associa-

tion of. See Aslib Liebherr, H., tower cranes, 226 Life of ballasts for gas-discharge lamps, by T. Hehenkamp, 32

Rafts, inflatable, preloaded with passengers, 763 Understanding of, in molecular terms, by Dr. M. F. Perutz, 796 ft, freight, for aircraft (Short Bros. & Harland), 809

Harrallic, 805

Hydraulic system for David Brown 950 tractor, 406

Lifting tongs for close stacking of barrels and

ting tongs for close stacking of barrels and cases (Walter Somers), 808 ght alloys, portable X-ray equipment for (Marconi Instruments), 533

— Structure for Manchester bus shelter, 94
Fluorescent, work (P. W. Allen & Co.), 729
Motor vehicle, working party on, 544
Radioactive, krypton 85 as source, 492

— Sources of, by Dr. E. J. Wilson and J. D. H. Hughes, 497

— Sources, radiation hazards, 499

- Sources, radiation hazards, 499 - Uses of, 499

— Source, quartz envelope (Osram), 85
— See also Lamp; Lighting; Spectrum
Lightfoot, Dr. E., on structural frame analysis
by electronic computer, 18 Lighthouse, Jakhau, equipment for (Stone-Chance), 681 Lighthouse, Jegri, equipment for (Stone-Chnace), 681

Chnace), 681
Lighting in corrosive, flammable and explosive situations (IES report) (book), 93
— in drawing offices, by F. J. Langdon, 506
— Fluorescent, in Chapel Cross atomic power station control room, 491
— — in drawing offices, 507
— Tube, chokes, testing life of, 32
— in iron and steel works buildings, 221
— for Mont Blanc road tunnel, 495
— Street, aluminium standards competition, 560

Transformer, flameproof, to NCB specifications (Belmos). 357
See also Illuminated; Illuminating; Lamp;

Light

Light
Lightning aircraft attains Mach 2, 103
Lightning aircraft attains Mach 2, 103
Lightning F. K., on stress analysis without strain measurement, 483
Likhtman, V. I., effect of surface-active medium on deformation of metals (book), 502
Limax filing machine (South Coast Engineering Co.), 760
Limatone reaction with segment 129

Limestone reaction with cement, 128 Limit design of framed structures, by Dr. J. Heyman, 275

Heyman. 275
Limitorque Valve Controls, Ltd., actuator for remote control of valves, 422
Lincoln Electric Co., geodesic dome, 473
Linde Air Products Co., low-temperature stress relieving of welded platework, 651; plasma arc torch for spray forming of high-temperature materials, 652
Lindsay's international register of wire rod and strip, 1957-1958 (review), 310
Linear feedback controls, analytical design of, by G. C. Newton, Jr., L. A. Gould, and J. F. Kaiser (review), 252

— Programming and associated techniques, by

Programming and associated techniques, by V. Riley and S. I. Gass (review), 310

— Methods and applications, by S. I. Gass (book), 554

(OOOK), 554
Liner, cargo, Gudrun Bakke, hydraulic screw jacks for hatches on (Götaverken), 688

Oriana, aluminium superstructure in (Vickers-Armstrongs, Ltd.), 505

Queen, replacement of (Cunard), 482, 636

See also Ships

— Stainless steel, for ZETA, 703
Linguistic problems, mechanical resolution of, by A. D. Booth, L. Brandwood and J. P. Cleave (review). 184
Linings, monolithic, for boilers, 619
Link-Belt Co., reduction gears (trade publication), 60
Link Belt Inc., trading report, 572
Linkages, dwell, in space, by K. H. Hunt, 248
Lip battery wrist watch, 256
Liquefied gas. See Gas
Liquid container, Handycan polyethylene (Lacrinoid), 600
— Methane. See Methane
— Oxygen. See Oxygen
Liquor, gas, disposal in River Trent in Stoke Stainless steel, for ZETA, 703

Liquor, gas, disposal in River Trent in Stoke area, 672

area, 6/2
Lisbon, bridge over Tagus, competition for, 643

— British Trade Fair, 234, 251, 369, 691;
Scottish exhibits at, 535
Lisborg, N., personnel bridge at Heinz factory
at Kitt Green, 578
Lister Blackstone Rail Traction, Ltd., Explorer

diesel-electric mixed-traffic locomotive for varying climates, 276

Literature of mathematics and physics, guide to, by N. G. Parke III (review), 310

— Scientific, Russian, translations of, note

on, 29
Lithgows, Ltd., Morar bulk ore carrier, 349
Lithium, liquid, as atomic fuel, 314
— Rocket fuel, 279
Little, Arthur D., Inc., satellite sail for Venus space project, 441
— Free Trade Area. See Free Trade Area
Lloyds Register of Shipping, Register book 1958-59. Vol. IV: directory, 310; rules and regulations for classification and construction of steel ships, 310; annual report, 359
LMFR power reactors, by S. B. Hosegood and P. M. C. Lacey, 313
LMFRE reactor, new facility for, 302
Load distribution through melting shop stage and gantry rail maintenance, by D. B. Wilson, 220
— Full, efficiency testing of turbine reduction

-- Full, efficiency testing of turbine reduction

gear units at, 306 Indicator (trade publication), 802 - Measurement in Amsler 500 tons universal

Measurement in Amster 500 tons universal testing machine, 433
 Measuring electronic tester at elastomers research laboratory of Du Pont Co. (United Kingdom), Ltd., 684
 Loader, brick, for automatic cutting, palletising and loading (Bradley & Craven), 454
 Hydrostatic drive for, 655
 Shovel, Frontloader 59 (Merton Engineering) 632

ing), 632 Loading, axial, properties of elastic materials under, 798

Bay, reinforced concrete, for Heinz factory at Kitt Green, 578

Bricks, automatic car loader for (Bradley & Craven), 454

Wind, offsets on the 707

& Craven), 454

— Wind, effects on roofs, 707

Loch Awe power scheme, 451, 463

— Glashan hydro-electric power contractors for, 579

Lock, Dr. J. M., on cryotrons, 550

Lockheed Aircraft Corp., static line retriever

system for paratroopers on Hercules aircraft, 374; electronic equipment adapted for arteriosclerosis treatment, 573; giant high-fidelity amplifier for missile research, 678; portable nuclear power plant, 735; R. Smelt appointed head of Discoverer satellite launching programme, 537

Lockheed foundation dampers for stamp shop

at Hawker Aircraft factory at Squires Gate, 214 Locknuts, Philidas (trade publication), 554

Lockwood, J. D., on suggestion schemes, 227-228

Locomotive boilers. Sea Boilers British Railway, 1803-1853, by G. F. Westcott (book), 343 Locomotive Development Committee, coal-fired

gas turbine, 441
Diesel, for British Railways, 78

— Comparison with steam, 298 Cost comparison with steam, 672 Davey, Paxman engines for, 89 Deltic, for main-line operation, 298

- Maintenance extensions for East Kent coast services, 776
- Manual, by W. F. Bolton (book), 311
- Operation and maintenance (Rolls-Royce), 689

Production statistics, 77
Transmission unit, Mekydro (J. Stone),

— Underground (book), 311

Diesel-electric, Bo-Bo 400 h.p., for British
Guiana (Yorkshire Engine Co., Ltd.),

— Electric, control system for, 277
— Electric, Explorer, 276

Electric. Explorer, 276
Hydraulic, for main-line operation, 298
Hydraulic, with Twin Disc torque converter drive, for High Marnham power station (Andrew Barclay), 51
Mechanical shunting, 170 h.p. (Yorkshire Engine Co., Ltd.), 132
Drivers' training school, Stewarts Lane, 776
Electric, maintenance extensions for East Kent coast services, 776
Storage battery, underground (book), 311

— Storage battery, underground (book), 311 — Testing laboratory at Willesden, 218 Exports of, 78

Gas-turbine, coal-fired, project of Locomotive Development Committee, 441 Industry, position and prospects of, 77 Narrow-gauge, hydrostatic drive for, 655 for South African Railways (Metropolitan-Vickers South Africa), 563

Steam, Beyer-Garratt, on Rhodesia Railways, 52 Comparison with diesel, 298

Cost comparison with diesel, 672 Giesl ejector exhaust system, 510 Plain Words on completion of last, 2 Production statistics, 77 Supersession of, 298

— Supersession of, 298
 — Underground (diesel and storage battery) (book), 311
 Lodge Plugs, Sintox alumina ceramic, 555
 Loewy Engineering Co., Ltd., rolling-mill plant for Brinsworth Mill, 22
 Loncraine, D. C., & Co. (Jiffytex), Ltd., Jiffybond sealing paste (trade publication). 283
 Londex, Ltd., smoke alarm (trade publication), 283; relays (trade publication), 650; busbar relays for high current d.c. systems, 809
 London Airport, FIDO at, 763

London Airport, FIDO at, 763

— Monorail project, 387. See Letter, 567

— Noise of TU104 airliners, 458

Noise of TU104 airliners, 458
 Birmingham motorway, construction schedule for, 525; service areas for, 543; progress on, 776
 Building and Engineering Contractors' Accident Prevention Group, chemical engineer looks at safety in building operations, by B. Halfpenny, 397
 Chamber of Commerce, negotiations for UK-Russian exhibition exchange, 571
 Dispersal of civil servants from, 363

Dispersal of civil servants from, 363
 London, K. S., on work of plant engineers, 331
 New office buildings in, 234
 School of Economics and Political Science, course on operational research, 258
 Telephone dialling acides advances in 564

course on operational research, 258

Telephone dialling codes, changes in, 564

Traffic in, by H. D. Morgan 227

London Traffic (40 m.p.h. Speed Limit) (No. 1)

Regulations, 1959, 297

London Transport Executive, plan for Victoria-King's Cross underground system, 99; problems of peak travel periods, 99; Victoria tube project, 193. See Letter, 227; Victoria tube project, discussion in Parliament on, 201; disposal of trolleybuses, 264; ticket machines, 266; reconstruction of Notting Hill Gate underground station, 383; flyover and undergrass at Barking, 670 handling device for long welded rails, 739; tube train tests to determine impact of wheels train tests to determine impact of wheels on rails, 774

Underground Railways. Transport Executive

University. See also Imperial College
Longland, L., on Cr-Al<sub>2</sub>O<sub>3</sub> and Cr-Mo-Al<sub>2</sub>O<sub>3</sub>
cermets, 91

Loocke, G., rotary amplifiers (review), 475 Loom, Shirley, for continuous filament yarns,

Loop, water, high-pressure, for DIDO reactor,

Lord, Sir L., annual statement on British Motor Corp., 39; overseas tour of BMC factories and distributors, 177
Lorry. See Motor vehicle

Alamos Molten Plutonium Reactor Experiment, details of, 336 Los Angeles generator order to Brown Boveri, 369

Loser, B., methods of measurement (book), 802 Lotus Eleven Le Mans sports motor car, 240 Elite sports motor car, 240

Fifteen sports motor car, 240

— Seventeen sports motor car, 240
— Sports cars racing programme for, by
G. Wilkins 240
Loughborough College of Technology chemical engineering course for Diploma in

Louis W. Hill Award. See Hill, Louis W.
Low, Archibald, & Sons, Ltd., Alaflor extruded aluminium grating, 159; tanker heating coil developments, 250
Lowe, J. G., monorail system, 387
Lubricants, ball bearing, effect of water in, 403
— under radiation, by Dr. C. G. Williams, 715
Lubricating oil unit for gasifer-turbine plant

Lubricating oil unit for gasifier-turbine plant, See also Oil Lubrication of atomic reactor charging mechanisms, 715

Reactor control rod mechanism, 715 and friction of solids, by F. P. Bowden and D. Tabor (book), 745

Lubrication, "Life-long," of Allis-Chalmers crawler tractor track group, 479
Lucas Heights, radioactive waste disposal, 394
Lucas, Joseph, Ltd., chairman's annual statement, 39

Lüders' lines, phenomenon of, 798
Ludgate dust collector (trade publication), 502
Ludwig, N., handbook of materials testing.
Vol. I (review), 553
Luminescent crystals, 497
Lunar atmosphere, 333
— Journey, conditions and prospects of, 332
— Magnetic field, nature of, 334
— Probe Lunik summary of details of, 616

- Magnetic field, nature of, 334
- Probe, Lunik, summary of details of, 616
- Pioneer I, summary of details of, 615
- Pioneer IV, 322, 323, 333, 360; summary of details of, 616
- Television in, 333

— Thor Able I, summary of details of, 615 — Sextants, 744

Sextants, 744
 Trajectories, calculations relating to, 332
 Lunik lunar probe, summary of details of, 616
 Lurgi gasification, Bischoff tower purifiers for desulphurisation in, 588
 Lyon, Arthur, & Co. (Engineers), Ltd., Alcon centrifugal pump (trade publication), 28
 Lyons, J., & Co., Ltd., ice cream factory at Bridge Park, 690

## M

"M" combustion system, licence agreements for (MAN), 296

MacFire automatic oil burner with natural

draught (Urquharts), 38

MacFire oil-firing unit for boilers, printed circuit for control system of (Urquharts), 592

MacGregor International, trawling unit, 781 Machines, automatic tool changing on, 524

— Electrical. See Electrical Machines

— Foundations at Hawker Aircraft factory at

Foundations at Hawker Aircraft factory at Squires Gate, 212
Hire plan, FJE, 631
Man relationships, by Dr. Taube, 489
Tape control, 524
Tool design by absolute coordinates, 53
Design, electromechanical themes in by Earl of Halsbury, 53
Design, scholarships in, 97
Exhibition European guota for, 177

Design, scholarships in, 97
Exhibition, European, quota for, 177.
See Correction, 312
Exports of, 111
Industry, design scholarships for, 97
Industry, employment in, 110
Industry, position and prospects of, 110
Industry, productivity in, 111
Industry, research and development expenditure in, 97
Optimum transmission gearing for, by

expenditure in. 97

— Optimum transmission gearing for, by E. Stephan (review), 618

— Russian orders for British, 328

— Sumps, suction drainer for (Progress (Universal), Ltd.), 358

— Trades Association, scholarships in machine tool design, 97; comment on quotas for French fairs and exhibitions, 177. See Correction, 312; J. C. Snow elected vice-president, 562

— Transfer, 524

Machinery, depreciation of, by W. Brownlie Hendry, 479

— Hire purchase of, 631

— of magnet sector plates, 755

of magnet sector plates, 755
 Merchants, Association of British. See
 Association of British

— Association of Industrial. See Association of Industrial

Machinery's Annual Buyers' Guide 1959, by
K. A. Hill (review), 649

Machining of aluminium (trade publication),
746

Automatic control of, 526

Cast iron pipe flanges, tool for (Kitchen & Wade, Ltd.), 295

- Spark erosion equipment, RIG (Burton Griffiths), 761

Mackay DAC130 compressor, sales promotion for, 627

Mackay Industrial Equipment, Ltd., Allis-Chalmers "life-long" lubrication of crawler tractor track group, 479; FL4 crawler tractor with shovel and 3-tined ripper, 761 Mackintosh, John, & Sons, Ltd., new building for, 525

Mackowsky, M.-T., furnace slags textbook (review), 554 Maclean, D. J., on polishing of roadstone in

relation to resistance to skidding of bituminous road surfacings (book), 343

Macmillan, Hugh, Lecture. See Hugh Macmillan

Mac. See also Mc Madan, Charles S., & Co., Ltd., portable

hydraulic test set, 455 Magdalena valley oil exploration, 430
Maggi million ampere generator, AWRE, 703
"Magic" multi-fuel 600 h.p. engine for Berliet commercial vehicles, 45
Magnesite-chromite for open-hearth furnace roofs in Russia, 797
Magnesium-aluminium extrusions of fine grain (ICI), 555
—Canning for atomic reactor, 136

Canning for atomic reactor, 136 Rocket fuel, 275

Rocket fuel, 279
Magnet sectors for proton synchrotron for Rutherford High Energy Laboratory, 753
Magnetic alloy, platinum, Platinax II (Johnson Matthey), 183
Chucks, Fimex (Darwins), 697
Core calculatot (IBM), 698
Magnetic Devices, Ltd., series 335 subminiature relay, 196
Field, lunar, nature of, 334
Filter for David Brown 950 tractor, 406
Flow meter (Foxboro-Yoxall), 524

Flow meter (Foxboro-Yoxall), 524 Mirror in thermonuclear research, 702

Particle spectrograph, 771

— Spectrometer, 771

Positioning unit, Eclipse, for welding and fabrication (James Neill & Co. (Sheffield)),

Magnetic saturation calculation with digital computer, 719

Tape control of machinery, 526 Magnetic Valve Co., Ltd., automatic control valves (trade publication), 474

Magnetometer equipped AC-3 aircraft for oil prospecting (Hunting Geophysics, Ltd.), 296

Magnette motor car with Farina body (MG), 171 Magnifier, stereoscopic, Sterimag (C. Baker Instruments, Ltd.), 730

Magnum asbestos cement roof sheets (Universal Asbestos Manufacturing Co.), 683
Mago, R. N., on Indian Institute of Technology, 355
Mahindra Owen Private, Ltd., formation of,

Maiden 2C/ST screwing and threading ma-

Maiden 2C/S1 screwing and threading machine, chine, 633
Type A threading machines (Landis Machine-Maiden, Ltd.), 809
Maidstone by-pass, contract for western section to Sir Robert McAlpine & Sons, 391
Maintenance Sec. Cells

Mains, electric. See Cable

— Gas, boring for Hyde Park road improvement, 611

Twin, boring for Hyde Park road improvement, 611

Water, boring for Hyde Park road improvement, 611

Mains Cable Manufacturers' Association, termination of price fixing, 691

Maintenance operation (supplement), 527

— Organisation (supplement), 527

— Preventive, organisation of, 527

— Training centre, Rolls-Royce, 527

— Workers of Steel Co. of Wales, Ltd., strike of, 48

Mailand Lecture of Institution of Structural Maitland Lecture of Institution of Structural Engineers, 98

— on modern large-span suspension bridges, by O. A. Kerensky, 190 Silver Medal, 190

Malfettani, A., on fishermen's cooperatives, 790

Malins, P. G., appointed Midland Region manager of BIM, 299 Mallory No-Chat tungsten based shank material (Johnson Matthey & Co., Ltd.),

— 1000 sintered high-density metal, use in watches, 345

Malmo Oil Harbour, compressed air equipment for oil cisterns (Mobil Oil), 620

Malpas, R., on overspeed trip for reciprocating

Malpas, R., on overspeed trip for reciprocating engines, 508
Malta, deep-water harbour, tenders for, 363
Mammoth chain pulley blocks with flameproof electrical equipment (Geo. W. King), 809
Man cleaner, Bassaire, 415-416
— Licence agreements for "M" combustion system, 296
— Machine relationships, by Dr. Taube, 489
Manabe, D., on wave formation in shallow water, 776
Management, British Institute of See British

Management, British Institute of. See British

— Conference, Retail (Harrogate, 1959),
preliminary note on, 57

— Solartron, 131

— Decision Game, comment on, 65
— Direction in 1960's (supplement), 516

Management in the Electronics Industry, by
T. Burns (pamphlet), 386

Management, forecasting as function of, by
E. Broke Evans, 512

Guide to electronic computers by W. D.

Guide to electronic computers, by W. D. Bell (review), 122 Industrial, course at Cambridge University,

- European Conference for, on Industrial Prospects in Nuclear Energy (Stresa). See European Conference for Industrial Man-

agement International Academy of. See International Labour relations, comment on, 1

Place of technologist in, by Viscount Simon, 207
Sales, course in, preliminary notice, 812 See also Supervisors

Manager, role and responsibilities of, course at Madingley Hall, Cambridge, 11 Managing aviation techniques, by C. J. McCarthy, 669

Manchester Association of Engineers, electro-

iacnine-toot design, by Earl of Halsbury, 53

Bus shelter with light-alloy structure, 94
College of Science and Technology, scholarships for machine tool design course, 97; course on presentation of technical information, 185
Education Committee, teaching of mathematics (report), 529

— Education Committee, teaching of mathematics (report), 529

— University, W. B. Hall appointed to chair of nuclear engineering, 703

Mancuna Engineering, Ltd., glass fibre and Terylene filters, 620 Mancuna-Fumex filter (Mancuna Engineering),

Mancuna-Mister filter (Mancuna Engineering),

Mancur spring balance, by J. F. Perrin, 355. See Letters, 419, 531 Manganese from sea bed, 567 Manifolds, pipe, analysis of flow from, by Dr. E. Markland, 150

Manipulator, Hobson-CRL master slave, 491 — for pipe welding on site (Quasi Arc), 222
Mann, R. W., on tariffs for Common Market
countries, 126

Mannesmann Co., fuel supply pipeline for Egypt, 435

Manpower, practices impeding the full and efficient use of (report). 235
Mansell and Fisher, Skie stabiliser, 87 Manufacturers' Equipment Co., Ltd., Rapistan

live roller conveyor, 665 Manufacturing operation, audio instructed, AIMO, 786 Manure Rain system (Wright Rain), 705
Map, airways, discussion in Parliament on, 458
— Geological structures and, by A. Roberts
(book), 92

Mapping, conformal, and univalent functions, by J. A. Jenkins (book), 184
Maranyl nylon seals for buffers, 432
Marconi Instruments, Ltd., exhibits at Leipzig Spring Fair and IRE Convention (New York), 312; fish-finding equipment for trawler Falstaff, 375; portable X-ray equipment for plastics, fibres and light alloys, 533; Marconi Large Screen Image Amplifier, 773; R. L. Cogdale as European representative. 787; communication sources (trade publication), 802
Marconi Large Screen Image Amplifier, 773

representative, 787; communication sources (trade publication), 802

Marconi Large Screen Image Amplifier, 773

Marconi Marine, Consort radar equipment for small craft, 471

Marconi-Osram Valve Co., Ltd., 3-cavity klystron KLS2, 583

Marconi's Wireless Telegraph Co., Ltd., mobile microwave telephone and telegraph system for US Air Force bases in UK, 456; travelling wave systems, 650; closed-circuit television for slabbing mill of Steel Co. of Wales, 691; order from Recife, Pernambuco, 723

Marechal tent, 224

Margam Works. See Steel Co. of Wales, Ltd. Marine Engineers, Institute of. See Institute

— Exhibition. See Engineering, Marine, Welding and Nuclear Energy Exhibition

— Filters (trade publication), 443

— Propulsion, atomic. See Atomic propulsion

— Diesel-electric. for trawler Falstaff, 375

— Future trends in, 767

— See also Engine; Turbine; Propeller; Shin revistance

Future trends in, 767
See also Engine; Turbine; Propeller; Ship resistance
Market research by George Ellison & Co., 528
by Hamworthy Engineering, 528
Techniques for, 528
Survey of 1960's (supplement), 528
See also Trade
Marketing and distribution

See also Trade
Marketing and distribution, course on modern developments in, preliminary notice, 812
Oil, by C. T. Brunner, 562
of ram-type pump (John Blake), 528
Reorganisation by High Duty Alloys and Hadfields, 312
Trends in (supplement), 528
Marking of imports, discussion in Parliament on, 493
Machine het press presupportically operated.

Machine, hot press, pneumatically-operated (Phillips Bros. & Ellis), 358

Markland, Dr. E., analysis of flow from pipe manifolds, 150

Markland, Dr. E., analysis of flow from pipe manifolds, 150

Markland Scowcroft, Ltd., stainless steel tube (trade publication), 377

Marks, L. S., mechanical engineers' handbook (book), 746

Marley Group noise-absorbing acoustic pyramids, 653

Mars, life on, theories on, 637

— Space programme, 388

Marsden, D. J., flow over delta wings at low speeds with leading edge separation (book), 311

Marshall Organisation, U-blade for coal handling by tractor, 643

Marshall Organisation, U-blade for coal handling yard, Temple Mills, 738

Marston Excelsior, Ltd., aluminium piping for BR2 reactor, 46

Martin Co., thermoelectric generator for direct conversion of heat to electrical energy using polonium 210, 98, 110; flaw detection in honeycomb composite panels, 284; nitrous oxide gas for tracing leaks in aircraft fuel tanks, 659; PM-I portable nuclear power plant, 735

Martin, T. L., physical basis for electrical engineering (book), 92

Martindale Electric Co., Ltd., tool for cleaning small parts, 421

Marvex chain pulley blocks with flameproo electrical equipment (Geo. W. King), 809

Maryland Shipbuilding & Drydock Co.,

Marvex chain pulsey blocks with hameproo-electrical equipment (Geo. W. King), 809 Maryland Shipbuilding & Drydock Co., tanker powered by gas-cooled reactor, 547 Maschinenfabrik Augsburg-Nurnberg AG, agreement with General Electric Co., Ltd., 703 Masefield, P., on supersonic airliners, 566 Mason, R. on British earth satellite pro-

Maseneid, P., on supersonic airliners, 566
Mason, R., on British earth satellite programme, 330
Masonite Benelex hardboard (trade publication), 377
Masonry cement, leaner mixes for, 804
Mass production, laboratory investigation of (Osram), 85
Massachusetts Institute of Technology, digital

Massachusetts Institute of Technology, digital terrain model, 751

Massey, B. & S., steam hammer, 381

Massey-Ferguson, take-over bid for F. Perkins,
Ltd., 135

Massive objects, position control of, by A. Tustin and others (review), 713

Master Bar jig boring machine (Buswell & Sweeney), 5

Master Vending Machines Co., Ltd., cigarette machines, 266; sales methods, 564
Materials (trade publication), 283, 746

— Cycle (supplement), 518
— Development of new (supplement), 518
— at Engineering Exhibition, 503, 555
— Properties of, at high rates of strain (book),

502

Testing handbook. Vol. I: qualitative and quantitative instrumentation, by E. Siebel and N. Ludwig (review), 553

Mathematical tables and formulas, handbook of, by R. Stevens Burington (book), 746

Mathematics, literature guide, 185

for National Certificate students, by E. G. Shalders (book), 343

Periodicals on, 185

and physics, guide to literature of, by

— and physics, guide to literature of, by N. G. Parke III (review), 310

N. G. Parke III (review), 310

— in science and industry, comment on, 529

— Teaching of, Manchester report on, 529

Mather, L. E., on Mather & Platt, 359

Mather & Platt, annual report, 359

Matheson, Prof. J. A. L., virtual work and complementary energy applied to non-linear braced frameworks, 581; on architect and engineer, 664

Matheson, W. G., fourth national symposium on vacuum technology: transactions (review), 553

Matrix theory for physicists, by J. Heading (review), 60

Matthew Hall Group, fire protection (trade publication), 216
Matthew, Rolert, and Johnson-Marshall, architects for Commonwealth Institute, 804

Matthews & Mumby, Ltd., concrete roof for Manchester bus station, 94
Maurin, J., les biles atomiques à neutrons lent (book), 41
Mavor, Dr. J. I., obituary, 196
Max-Load high-capacity roller bearings (trade publication), 554
Maxam control valves for pneumatic hoists (Climax), 563
Maxam Power, Ltd., remote control equipment for Holman Rotomotors, 420
Maxoil-Duplex oil expeller (trade publication), 443

Maybach diesel engines (Bristol Siddeley Engines, Ltd.), 484
Mayhew, Y. R., engineering thermodynamics; work and heat transfer (review), 442
Mayne, S., on pay claim of air traffic control officers, 73; on pay offer to Civil Service clerks, 73; on Civil Service salaries, 364; on research expenditure and Civil Service negotiating machinery, 726
McAlister, K., work on radio telescopes in

McAlister, K., work on radio telescopes in Australia, 121
McAlpine, R. E., elected chairman, Nuclear Power Plant Co., Ltd., 176

Power Plant Co., Ltd., 176

McAlpine, Sir Robert, & Sons, Ltd., contract for western section of Maidstone by-pass, 391; Doncaster by-pass, 579

McCallion, Dr. H., on blade frequency of turbines, 645. See Correction, 800

McCalls Macalloy, Ltd., developments in Lee-McCall system of prestressing concrete, 610

McCarthy, C. J., on managing aviation techniques, 669

McClimont, W., on boiler refractories, 619

McCrone, A. K. L., diesel plant operators' handbook (book), 502

McDonnel Aircraft Corp., environmental test chamber, Foamsil foamed glass for, 379

McFadzean, W. H., election as president, Federation of British Industries, 488; views on the Budget, 599

McKinney, R., on nuclear energy programmes, 789

McMeeking report on commercial education, McMinn, S. J., review of Torsiontheorie, 282

MCT. See Member of College of Technologists Mc. See also Mac Me-silicon-boron system, possible practical applications of, 90

Meals, hot, vending machines for (Automat Machine Sales), 453

Measurement, methods of, by B. Löser (book),

Measuring machine, universal (Catmur Machine Tool Corp.), 357

— Microscope, toolmaker's (Degenhardt & Co.), 420

Co.), 420

Mechanical Engineers' Handbook, by T.

Baumeister and L. S. Marks (book), 746

— Institution of. See Institution

Engineering, development trends, 758

— Research Laboratory, summaries of research at, 121; note on heat bibliography 1955-56, 123; analogue method for design of hydraulic relief valves, 151; research summaries, 185; tests on effect of water in lubricant on pitting in ball bearings, 403; research summaries, 411; renamed National Engineering Laboratory, 583.

See also National Engineering Laboratory

— Science, Journal of. See Journal

— Thermodynamics, by D. A. Mooney (review), 185

— Handling, trend to, 524

(review), 185

Handling, trend to, 524

Resolution of linguistic problems, by
A. D. Booth, L. Brandwood, and J. P.
Cleave (review), 184

World Electrical Year Book 1959 (review),

Year Book, 1959 (review), 649

Year Book, 1959 (review), 649
Mechanics applied to engineering, by G. H. Ryder (book), 123
Fluid, textbook of, by J. R. D. Francis (book), 61
High Speed, Institute of. See Institute
Higher technical, by I. Szabo (review), 122
Non-linear, by H. Kauderer (review), 475
Mechanisation of fishing industry, 790
Meddings, W. J., Ltd., Pacera jigsaw, 729
Medical applications of atomic energy, research reactor for, 462
— of nuclear materials, 302

— of nuclear materials, 302 Research Council, work on industrial noise, 234

Medicine, Aviation, Royal Air Force Institute
of. See Royal Air Force
Medicine Aviation, Royal Air Force
of See Royal Air Force

Medlycott, A., on applied building construction (book), 123
Megator Pumps & Compressors, Ltd., pumps for paraffin wax, 156; Dolphin floating strainer, 229; Dolphin suction strainer (trade publication), 474
MEL truck graps (Thomas Smith & Sons), 729

MEI truck crane (Thomas Smith & Sons). 728 Meili, Ernst, Metrac lorry with lifting nose, 72

Meili, Ernst, Metrac lorry with lifting nose, 72
Mekydro transmission unit for diesel locomotives and railcars (J. Stone), 134
Melbourne, music bowl with plywood and aluminium canopy, 610
Melman, Prof. S., comment on book Decision-Making and Productivity, 1
Melting of metals, equipment for, at Foundry exhibition, 722
— Shop roof design, 221
— Stage, load distribution through, by D. B. Wilson, 220
— Vacuum. See Vacuum melting
Melville, Sir H., on need for post-graduate research, 331
Member of College of Technologists, 733

Member of College of Technologists, 733

Memotron cathode-ray tube in Infinite
Persistence Solarscope oscilloscope (Solar-Menrow, Ltd., multi-purpose filter with throw-away cartridge, 533 Mental health, progress in treatment of, 669

Mercedes-Benz, "L" range of motor trucks,

Merchant ships. See Ships; Liners; Tankers; etc. Mercian fungicidal wallpaint (Farrow & Jackson), 379

Mercure thermal electric power project, loan for, 791

for, 791

Mercury computer, programmes for, 53

MERLIN reactor, functions of, 460

Merry, 1. W., review of handbook of automation, computation and control, 713-714; review of Introduction to design of servomechanisms, 713-714; review of Position control of massive objects, 713-714; review of Les notions de base, 713-714

Merryfield Andrew, Ltd., Gramdeck tape

Merryfield, Andrew, Ltd., Gramdeck tape recorder deck for use with radiogram, 564 Merryweather & Sons, Ltd., Dautataro fire fighting vessel for Port Fiji, 622

Merton Engineering Co., Ltd., Frontloader 59 shovel loader, 632
Mervyn Instruments, Mervyn-Harwell square wave polarograph (trade publication), 618

Mervyn-Harwell square wave polarograph (trade publication), 618

Merz & McLellan, Chapeleross atomic power station, 367

Metachemical Processes, Ltd., Hydrotron vapour blasting equipment, 284

Metals and alloys, vacancies and other point defects in (book), 475

— Clad graphite tube, Metica, 555

— Corrosion by vapours from organic materials, by V. E. Rance and H. G. Cole (book), 343

— Cutting chip formation in: hydrodynamic

(book), 343
Cutting, chip formation in: hydrodynamic theory, by M. M. Lamm, 444
Deformation of, effect of surface active medium on, by V. I. Likhtman, P. A. Rebinder, and G. V. Karpenko (book), 502
Electron gas in, 465
Finishing technical service (Canning), 509

Metal Gravure Co., Ltd., name plates with "Twinstik" adhesive, 309

— Guillotines, Besco-Truecut (F. J. Edwards Ltd.), 730

Honeycomb sandwich radar aerials (A. V. Roe), 375

Metal Industries, Ltd., acquisition of Avo, Ltd., 296 Handbook and Directory, 1959 (review)

- Institute of. See Institute Irradiation damage of, 238 Liquid, atomic fuel. See Atomic fue.

Melting equipment at Foundry Exhibition, 722

Metting equipment at Foundry Exhibition, 722

Metal & Pipeline Endurance, Ltd., leak detection (trade publication), 283

— Products from Holland, 1958 (review), 649

Metal Propellers, Ltd., chemical vessels (trade publication), 185; Glitsch ballast tray, 665

— Refractory. See Refractory

Metal Sections, Ltd., woodfilled intermediate span joists, 776

— Special-purpose, for atomic energy, 491

— See also Ceramic-metals; Metallography; Metallargy

Metalastik, Ltd., torque transfer coupling for marine drive, 434; Cushyfoot "S" antivibration mounting for high-speed diesel engines, 485

Metalli Preziosi S.p.A., interest acquired by

engines, 485
Metalli Preziosi S.p.A., interest acquired by Johnson, Matthey, 604
Metallizing Equipment Co., 31-C powder spray coating, 504
Metallography, by L. Guillet (book), 802
— See also Metalls: Metallurgy
Metallurgy of atomic fuels, consolidated report on, by L. M. Wyatt, 106, 136
— Powder. See Powder metallurgy
— Symposium of special (book), 802
— See also Iron and Steel Institute; Institute of Metals; Metallography: Foundry
Meter, accelerometer, transistorised (J. Lang-

Meter, accelerometer, transistorised (J. Langham Thompson), 69

Meter, accelerometer, transistorised (J. Langham Thompson), 69
Brake, Don Brake Meter, for motor vehicle testing, 612
Dew point, Alnor Dewpointer (Electric Resistance Furnace Co.), 808
Displacement, photo-transistor for vibration analysis (Fairey Air Surveys), 522
Flow, magnetic (Foxboro-Yoxall), 524
Photoelectric alarm for (Rotameter), 633
for germanium classification (GEC), 69
Smoke, for diesel exhausts, 196
for water flow speed and direction (Kelvin Hughes), 70
Metering pumps with automatic control (Distillers Co.), 633
Methane drainage at collieries, 779
Gas import, effect on mining industry, 201
Liquid, discussion in Parliament on, 428
Liquid, discussion in Parliament on importation from US, 571
Transportation by sea, discussion in Parliament on, 731
Methane Pioneer natural gas tanker, 232, 233, 571
Properties and uses, 779

- Properties and uses, 779
Metica metal-clad carbon or graphite tube, 491, 555

Metrac lorry with lifting nose, 72
Metrawatt insulation and earth continuity testers (Metrix), 634
Transistorised cable tracer (Metrix), 600
Metrix Instruments Ltd., Metrawatt transistorised cable tracer, 600; Metrawatt insulation and earth continuity testers, 634
Metropolitan-Vickers-Beyer, Peacock Ltd., locomotives for South African Railways, 563

Metropolitan-Vickers Electrical Co., Ltd., Metropolitan-Vickers Electrical Co., Ltd., irradiation laboratory. 491; glow plug for diesel engines, 496; Intelligence and Interchange Section, 519; research policy, 520; pole-modulated tapped winding electric motor, 326; mine hoist recorders, 327; course for school-leavers, 573; AWRE tandem accelerator, 771; work on accelerators, 771

Metropolitan-Vickers South Africa (Pty.) Ltd., locomotives for South African Railways, 563

Metropolitan-Vickers annual report (1957-8), 311

— See also London

Mexico, American Concrete Institute meeting in, preliminary notice, 671

— Atomic energy programme, 80

Meynell & Sons, Ltd. hot/cold water-mixing valve for showers, 453; valves and fittings (trade publication)

MG Magnette motor characteristics, Ltd. diesel engines, 37

Mica insulation, Samita paper (trade publication), 746

Micanite & Insulators Co., Ltd., Samica paper mica insulation (the publication), 746

Michell, A. G. M., obtuary, 260

Michelotti, G., body syling for Herald motor car, 580

Micro sub-sub-miniature control switch (Honeywell Controls), 327

Microfilm xerography system, Copyflo 5, for reproduction of crawings (Rank-Xerox), 698

Microphones (trade publication), 474

Microphones (trade publication), 474
Microscope, measuring toolmaker's (Degenhard & Co.), 420
Microscopic investigation, preparation o samples for, by E. Poulsen (book), 253
Microstructure. See also Metallography
Microtester, Diavite, for surface measurement (H. Hediger), 352
Microwave oscillator, Ophitron (GEC), 774
— and standard combined cooker (Westinghouse), 812
Valves, electronics of, by W. J. Kleen

Valves, electronics of, by W. J. Kleen (review), 184

Midas recording apparatus, price reduction, 692

Midget hoist for lifting 1,000 lb loads (Haltrac), 160 Midland Heating & Ventilation Co., formation

of, 480; reorganisation of, 480
Midland Silicones Ltd., glasscloth laminates (trade publication), 746
Midlands, East. See East Midlands
— West. See West Midlands

Migration and racial questions, by Sir M. Burnet, 142 Milan Fair, atomic energy exhibits (UKAEA)
492

Mild steel. See Steel
Miles Hivolt, sub-critical reactor for research and education, 14!: packaged electrostatic generator, 389. URANIE reactor, 461. See also 141; Felini electrostatic generator, 466
Miles, J. W., potential theory of unsteady supersonic flow (review), 681
Milford Haven project, 700
Milk vending meahines, 266, 267, 325
Mill, ball, for beryllium powder production 413
— Flour, at Barnes Milling Ltd., 156

413

Flour, at Barnes Milling Ltd., 156

Rolling. See Rolling mill and under specific types of rolling mill
Millard, Dr. R. S., on research into road construction, 671

Millars' Machinery Co., Ltd., repairs to Cononish Viaduct, 642

Millar C. L. on digital terrain model, 751

Miller, C. L., on digital terrain model, 751 Milling machines, continuous rotary (Wadkin,

Ltd.), 420 Lapping attachment (Alfred Herbert, Ltd.), 293

Ltd.), 293

— Transportable, Swiss "Rigid," 562

— Werner, with finger tip control (Rockwell Machine Tool Co.), 261

Millington, Thomas, & Co., Ltd., history and activities of, 764; opening of warehouse 764

Mille harman

764
Mills beverage service, automatic drink-dispensing machines, 325
Mills, Dr. H. R., on unloading of iron ore ships in USA and Canada, 593
Mills, Lord, remarks at opening of Fawley petrochemicals plant, 24
Mills Scaffold Co., Ltd., Self-Lock scaffolding (trade publication), 185
Milne-Thomson, L. M., theoretical aerodynamics (book), 746
Mine, coal. See Colliery

mics (book), 746

Mine, coal. See Colliery

Hoist recorder (Metropolitan-Vickers Electrical Co.), 327

Pegson Marlow centrifugal pump for (Pegson), 634

Rock pressure in, by E. de St. Q. Isaacson (book), 475

United States National Bureau of. See United States National Bureau of. See United States

See also Coal: Colliery: Mining: Ores

Miners, coal, strike in Belgium, 355

Mineral insulated thermocouples (British Insulated Callenders Cables), 717

Wool blankets, Sandvik steel belt conveyor for (Mineral Wool Insulation Co.), 294

Mineral Wool Insulation Co., Sandvik steel belt conveyor for mineral wool blankets, belt conveyor for mineral wool blankets,

Pipe insulating section (Stillite), 579
 See also Coal; Colliery; Mining; Ores
 Mineworkers, X-ray examination of, 142

Mineworkers, X-ray examination of, 142
Mini-Kop hydraulic copying lathe (Myford Engineering), 533
Mining, coal, law, by J. Sinclair (review), 376
— Deep-sea, for metals, 567
— Engineers from Yugoslavia, visit to UK, 73
— Equipment (trade publication), 474
— Industry, position and prospects of, 201
— Non-ferrous, discussion in Parliament on 330
— Subsidence report (LCE), 570

330
— Subsidence report (I.C.E.), 579
Minisonic liquid whistle homogeniser (Ultrasonics Ltd.), 781
Ministry of. See Education; Health, etc.
Minnesota Mining & Manufacturing Co.
thermoelectric generator for direct conversion of heat to electrical energy suing polonium—210, 98, 110
Minx motor car test on Belgian cobblestones
(Hillman), 368

(Hillman), 368 Mirrlees, Bickerton & Day, Ltd., diesel engine installation with evaporative cooling, for Voice of America, 38; J-range diesel engines (trade publication), 60; Monarch range of diesel engines, 569 Mirror geometry for thermonuclear research,

Machine experiment at Ogra, 702 Magnetic, in thermonuclear research, 702

Magnetic, in thermonuclear research, 702
Missile, Atlas, in orbit, 3
Ballistic, intercontinental, Atlas (General Dynamics Corp.), 245
Bases in US for Boeing Bomarc, 700
Bloodhound, for RAF, 604
Bomarc, Boeing, bases for, 700
Guided, Seacat, Admiralty orders for (Short Bros. & Harland), 226
Spike aerial for (Armstrong-Whitworth) - Spike aerial for (Armstrong-Whitworth), 113

See also Rocket; Satellite; Weapon, guided

guided

Jupiter, monkeys in 726, 727

Research, giant high-fidelity amplifier for (Westinghouse Electric Corp.), 678

Mitchell, A., technical drawing (review), 342

Mitchell Construction Co., Ltd., reinforced concrete hyperbolic cooling towers for Padiham B power station, 579

Mitchell Engineering Group, nuclear power projects, 427

Mitchell Engineering Itd. Mahy Dick atomic

projects, 427

Mitchell Engineering Ltd., Moby Dick atomic cargo submarine, 546; agreement with Fairfield Shipbuilding & Engineering Co., Ltd., for marine nuclear energy development, 546;

Mitchell-Fairfield-Combustion Engineering Group, details of boiling-water reactor for ship propulsion, 641, 673

Mitchell, Sir G. W., on George Wimpey & Co., 732

Mitsphish atomic submarine to 1.

Mitsubishi, atomic submarine tanker, 675 Mixer, Banbury, electronically-controlled, in rubber manufacture, 352 Mixing unit for emulsions (Wakefield Dick), 422

Mobil Oil Co., discussions on air pollution, 11; compressed air equipment for oil cisterns in Malmo Oil Harbour, 620

Moby Dick atomic cargo submarine, 546
Model of atomic reactor and plant for
Savannah, 674

for crankcase deflection measurement, 304
Design by, policy (Matthew Hall), 525
Gurney steam carriage, 424
Gypsum plaster, for reinforced concrete design, 468
Perspex, of frigate gear case, 786
for reinforced concrete design, by Dr. G.

for reinforced concrete design, by Dr. G. Brock, 468

for schools, etc., list of, 280 - Tankers, atomic-propelled, 547

- Tests on turbine disc and blades, 645

Modern flats, by F. R. S. Yorke and F. Gibberd (review), 778

Modern Furnaces & Stoves Ltd., recirculating type annealing furnace for stress relieving, 785

Mohler, K., German committee on steel construction (book), 746

Mohole project to drill hole through Earth's crust, 567

crust, 567
Mohorovicic discontinuity, project to drill hole through, 567
Moir, J., high-quality sound reproduction (review), 282
Molybdenum-chromium-alumina cermets, by J. B. Haffadine, L. Longland and N. C.

J. B. Haffadine, L. Longland and N. C. Moore, 91
Disulphide dry bearing surface treatments (Glacier Metal), 503

Process compared with Sulfinuz process,

Mond Nickel Co., Ltd., nickel alloy steels (trade publication), 283

Monitor, automatic, for aircraft fuel, 647

— for end point recording (AWRE), 102

— Vibration (Giesler), 633

Monitoring instruments for process control, 783

— Service, radiation, 299. See Correction, 573

Monk, Arthur, & Co., Ltd., contractor for Heinz factory at Kitt Green, 577 underground pipeline for Stanlow refinery, 611; new works at Hull docks, 670; Stamford bypass on Great North Road, 776

Monkeys as space pilots, 331

— in space research, comment on, 727

— Research, Plain Words on, 726

Monkland canal improvements, 776

Monmouthshire, Wales and, Report on Developments and Government action in, 672

Monolithic linings for boilers, 619

Mono-Rail transporter, hydraulic (Road Machines (Drayton), Ltd.), 390

Monorail project for London Airport, 387. See

Monorail project for London Airport, 387. See LETTER, 567

 Prototype track at Basildon, 387
 Monsanto Chemicals Ltd., polyethylene plant at Fawley, 22; annual report, 456 Mont Blanc road tunnel through Alps, 162, 494, 739

Montecatini Chemical Co., petrochemical plant project at Brindisi (S. Italy), 509
Moon as radio noise source, 744

Rocket, Russian, 36

— Russian, 323

— See also Lunar

Mooney, D. A., mechanical engineering thermodynamics (review), 185; thermodynamics and heat transfer (review), 442

dynamics and heat transfer (review), 442
Moonman, E., on suggestion schemes, 195
Moore, N. C., on Cr-Al<sub>2</sub>O<sub>3</sub> and Cr-Mo-Al<sub>2</sub>O<sub>3</sub>
cermets, 91
Moore, P., on Orion "do it yourself" astronomical telescope kit, 416
Moore Special Tool Co. Inc., universal measuring machine, 357; No. 3 jig boring machine, 600

suring machine, 357; No. 3 jig boring machine, 600

Moped. See Bicycle, motorised
Morar bulk ore carrier for Scottish Ore Carriers Ltd., 349

Morfax Ltd., activities of, 520

Morgan Crucible Co., Ltd., crucible deliveries by Condor express freight train, 435; crucible furnaces, 722

Morgan, H. D., on Victoria Tube project, 193, 227; Potters Bar railway tunnels, 707

Morgan Refractories Ltd., Purox refractories, 683

Morgan, T. J., telecommunications economics (review), 342

Morris, B. O., Ltd., hand pneumatic tools (trade publication), 93
Morris, Herbert, Ltd., rationalisation agreement with Steels Engineering Products, 199
Morris & Ingram (London) Ltd., "Probe-Lite" inspection lamp for small orifices, 4
Morris Oxford Series V motor car, 464
Mortality rates, effects of improved, 364
Morton Machine Co., Russian orders for, 312
Moscow, air service to, 458, 700
— Airport, Pye aircraft landing system, 755-756
— Scientific attache, D. A. Senior appointed, 489, 493
Moseley, William (Engineers), Ltd., wheel washer for motor vehicles, 297
Moskvitch motor car, 740
Motion, collective, conference on, Physical

Motion, collective, conference on Physical Society, 465

— Linear, ball bushings for precision (Ransome & Marles), 471

Motors, air, Rotomotor, remote control equipment for (Maxam Power, Ltd.), 420

— Roat inhoard runshout Katamar, 86

Boat, inboard runabout, Katamar, 86
— Outboard, Seawings hydrofoils for (Avica), 87

(Avica), 87

— Skie stabiliser for, 86-87

— Car accidents. See Road accidents

— Air transport for delivery of new (Vauxhall), 57

— Appia 1,090 c.c. (Lancia), 329

— Assembly in South Africa, Government inquiry into, 322

— Aston Martin, chassis fabrication, 786

— Austin A55, 104

— Battery-operated, TFL 393 See Cor-

- Battery-operated, TEL, 393. See Correction, 496

- Berkeley sports, 329
- Bond Minicar threewheeler, Mark F, 45
- Chassis, Aston Martin, 786
- Communard, 740
- Components, service for, 57
- Consul, restyling of (Ford), 265
- Czechoslovakian, at Geneva Motor Show, 329
- Daimler Part sports 496

Daimler Dart sports, 496
Design and development (Vauxhall), 523
Engine, BMC 1,489 cc, 171 Engine, Fiat, four-cylinder, 329 Engine, gas turbine, Ford "704," 676,

- Engine, gas turbine, position and prospects of, 368 Export markets, changes in, 488

Export sales progress by Jaguar, 177 Fiat, four-cylinder 1,800 and 2,100 cc,

- Flaminia 21 litre (Lancia), 329
- German, at Geneva Motor Show, 329
- Herald (Triumph) by G. Wilkins, 580
- Hillman Minx, test on Belgian cobblestones, 368

Imports of foreign, 544
Industry. See Motor industry; Motor-Industry. See vehicle industry

Lotus Eleven Le Mans sports, 240 Lotus Elite sports, 240 Lotus Fifteen sports, 240

Lotus Seventeen sports, 240 - Lotus sports, racing programme for, by G. Wilkins, 240
- Morris Oxford Series V, 464
- Moskvitch, 740
- NSU Prince, 329

Moskutch, 740

NSU Prince, 329

Output statistics (Ford), 135

Parking, by G. Baker and B. Funaro (review), 777

Pobieda, 740

Production trends, 44

Racing, brake drum temperatures in, by T. P. Newcomb, 709

Racing, Vanwall, G. A. Vandervell's work on, 105

Radio, Touchbutton Pyeway, 104

Rally at Sestriere, results of, 368

Reconditioned parts, 57

Renault Floride, 708

Riley 4/68 1½ litre, with Farina-styled body, 612

Russian, 740

Safety belts, 297, 324

Simca Fulgar "dream," 200

Skoda, 329

Sports, Aston Martin DBRI/30, in Elogida race, 393

Sports, Aston Martin DBRI/30, in Florida race, 393

Sports, Lotus types, 240 Sports, plastics bodied prototype, Sham-

Spring cleaning guide, 393 Standard, discontinuance of, 644

- Styling studio, Dr. G. Farina, 708
- Suspension design problems, electronic computer for (A. V. Roe), 644
- Tests by Ministry of Transport and Civil Aviation, 104

Toyopet sales in U.S., 328 Tschaika, 740

Victor, exports to North America, 103 Victor Series 2 (Vauxhall), 265

Volga, 740
Volkswagen, proving ground for, 143
Zephyr, restyling of (Ford), 265
Zim, 740
ZIS, 740

Zodiac, restyling of (Ford), 265
See also Motor vehicles
Cycle exhaust. See Exhaust

Electric, a.c. dynamic braking, by Dr. O. I.
Butler and Dr. V. Ahmad, 590
— Fractional h.p. (Crompton Parkinson),

Slip-ring, normal and unbalanced-voltage torque speed curves for, 591

Squirrel-cage, normal and unbalancedvoltage torque speed curves for, 591

- Synchronous, digital computer for design

of, 719

Tapped winding, pole-modulated (Metropolitan-Vickers), 326

Traction, for Explorer diesel-electric locomotive, 277

Industry, effect of European Common Market on, 272 - and European Common Market, 44 - France, 796

- Research Association, research on engine exhaust fumes, 428

Motor industry, in Russia, by G. Wilkins, 740 — Standards in, 104

Internal-combustion. See Engine
Launches. See Motor boats
Lorry. See Motor vehicle

-- Manufacturers and Traders, Society of. See Society Omnibus. See Bus

- Show, International, Geneva, 329 - Spirit statistics, 631 - Torque (Woden Transformer Co. and T.S.

Precision Engineering), 421
Truck. See *Truck*Vehicle, battery-electric, position and pros-

pects of, 663

- Body of aluminium alloy, 749

- Bonnets, plastics for, 392

Brakes, working party on, 544
Cargo lift vans and trucks with elevating bodies (Rootes Motors), 781

Chassis of aluminium alloy, 749

Coachwork, glass-reinforced plastics, repair of (Automobile Plastics Co., Ltd.), 448 — Commercial, Berliet 600 h.p., "Magic" multi-fuel engine and "Relaxe" cab for, 45
— Commercial, production trends, 44
— Commercial, Reiver range (Albion

Motors), 297

Commercial, transporter, 30 ton (Douglas Equipment), 200

Don Drake Meter for testing, 612

Electric. See Electric Vehicle Association. See also Motor car, battery

Exhaust. See Exhaust Exports of, 43

Exports of, 43

Ford Escort, as AA breakdown vehicles for Preston By-pass, 393

Goods, customs formalities affecting, 143

Grain carriers of aluminium alloy (Scammell), 749

Headlamp Testing (book), 154

Headlamp Testing (book), 154

Headlamp Testing (book), 154

Heater and demister for, D9 (Clayton), Heavy, price reductions by Leyland Motors, 488

Indicators, working party on, 544
Industry, heavy, competition from mass producers, 103

Industry, position and prospects of, 43

Lights, working party on, 544

Lorry, Cargon freighting system for, 787

Lorry, gas turbine, "704" (Ford), 676

Lorry, Metrac, with lifting nose, 72

by K. Newton and W. Steeds (review), 443

by K. Newton and W. Steeds (review), 443
Output statistics (Ford), 135
Safety seat belts and harnesses, 297, 324
Standards, working party on, 544
Tests by Ministry of Transport and Civil Aviation, 104
Trucks, Cargo Lift, with elevating bodies (Rootes Motors), 781
Trucks, Mercedes-Benz "L" range, 496
Van, reinforced polyester resin body for (Samlesbury Engineering), 557
Wheel washer (William Moseley (Engineers), Ltd.), 297
Wings, plastics for, 392
Workers, Austin, bonus scheme for, 537
Yacht. See Yacht
See also Engine
Motoring Associations and Clubs, Federation of Commonwealth. See Federation
Conference, Commonwealth, 544
Motorists, customs formalities eased for, 143
Spring cleaning guide, 393 Spring cleaning guide, 393

Spring cleaning guide, 393
Motorway construction in Europe, 643
Frost damage to, 171
London-Birmingham, construction schedule for, 525
Birmingham, progress on, 776
Birmingham, service areas for, 543
Progress on new projects, 450
Mott, Hay & Anderson, Notting Hill Gate underground station, 384; Dartford-Purfleet tunnel, 579
Mould closing machine, automatic (Floodgate)

Mould closing machine, automatic (Floodgate Steel Fabricating Co., Ltd.), 722

— Plastics, ready-mixed compositions for (Kenilworth Manufacturing Co.), 588

Seal, Epophen, for casting epoxide resins (Leicester, Lovell & Co.), 183
Mouldable reinforced plastics sheet, Resnit (Leicester, Lovell), 588
Moulding compound, Rockite K501 (trade publication), 746
Machine, automatic, Blo-flex (J. W. Jackman & Co.), 722

man & Co.), - Automatic (British Moulding Machine Co.), 722

Blo-shooter, for blowing or shooting cores or moulds (Pneulec), 722 cores or moulds (Pneulec), 722

Diaphragm, Taccone (Baker Perkins),

— at Foundry Exhibition, 722

— Shockless jolt squeeze, SJ5 (Pneulec), 722

Materials at Foundry Exhibition, 722

— Injection (trade publication), 283

— Polyester dough (Bakelite), 160

Plastics, Diakon for, 210

Polyetrana, for reference, Eksa Plastics Polystyrene, for refrigerator, Ekco Plastics, 345

Shell, bibliography, 343 System, Hallsworth (Rubery, Owen), 722
See also Foundry

Mountings for aircraft electronic equipment, Anti-vibration, for airborne electronic measuring instrument, 373

Vibration, for camera installations, 372 Vibration, Cushyfoot "S" for high for highspeed diesel engines (Metalastik), 485

— Vibration, for low frequencies, 372
— Vibration, test rig for vibration of (Fairey), 373

Movsovic, M. I., on education in Russia, 733

Mowlem, John, & Co., Ltd., extensions to Royal Victoria Dock, 94

MRR research reactor at Prockhaven National

MRR research reactor at Brookhaven National Laboratory, 462 Muir-Hill 10B dumper (E. Boydell & Co.), 454 Muirhead & Co., Ltd., two-phase decade oscillator, 70 Mulder, J. E., steam turbine performance and economics (review), 745

Mullard Equipment, Ltd., Autoplot automatic electronically-controlled tool positioning

machine, 5

Mullard, Ltd., instrument cathode-ray tube using helical post-deflection acceleration, 88; "History of Radio" (film strip), 142 packaged transistors, 583; trochotron high-speed decimal stepping tube, 653

Muller-Hanna ore handling installation, by F. D. Vines, 593

Munton, R., on shipowners' problems 530

Muntz, Alan & Co., Ltd., GS34 Pescara gasifiers for ore carrier Morar, 349-350

Murad Developments Ltd. 4D capstan lathe with screw cutting at cross slide, 532

Murad Developments Ltd. 4D capstan lathe with screw cutting at cross slide, 532

Murex Welding Processes Ltd., welding electrode exhibits, 556

Murgatroyd, Prof. W., lecture tour of, 269

Murrell, K. F. H., on overload rating for human beings, 365

Museum, Birmingham, of Science and Industry, old steam engines at, 380; engineering hall extension. 380

— British, Mancur spring balance, 531

— National, US, annual report, 343

— Science, Canberra aircraft for, 536

— Handbook of cycles collection. Part II, by C. F. Caunter (book), 29

— Time measurement. Part I. historical review, by F. A. B. Ward (book), 29

Musgrave, Sir C., appointed chairman to Iron and Steel Board, 167

Music bowl at Melbourne, with plywood and aluminium canopy, 610

aluminium canopy, 610 Musical and art interests of engineers, Plain Words on, 322

Pitch, discussion by Acoustics Group of Fhysical Society, 695
 Musquash floor cleaning machine (British

Vacuum Cleaner & Engineering Co., Ltd.)

Mutations in living tissues, radiation and, by Dr. H. E. Kubitschek, 537

Myford Engineering Co., Ltd., Mini-Kop hydraulic copying lathe, 533; MG12 cylindrical grinding machine for manual operation, 534

NAITO, Tachu, on aseismic reinforcement for Calder Hall type reactor, 79
Name plates, "Twinstik" adhesive for (Evode, Ltd.), 309
Named effects and laws, dictionary of, by D. W. G. Ballentyne and L. E. Q. Walker (review), 311
Nanier Spraymat designs system, 749

Napier Spraymat de-icing system, 749
National Boat Show, exhibits at, 86

— Bureau of Standards. See United States

— Certificate students, mathematics for, by
E. G. Shalders (book), 343

E. G. Shalders (book), 343

— Coal Board, tri-lingual strata control glossary (book), 29; fall in coal demand estimates, 66; remarks on position and prospects of, by Sir J. Bowman, 66; X-ray examination of mineworkers, 142; position and prospects of coal industry, 144; Warmco smokel.ss fuel, 234; underground locomotives (diesel and storage battery) (book), 311; formation of Process Development Department, 630; coal; summer prices and delivery methods, 660; report and accounts (1958), 759; methane, from coalfields, 779

— College of Agricultural Engineering, establishment of, 226; discussion in Parliament on establishment and activities of, 234

— Control (or Automation) College project, 693

693 Council of Social Service, work for young people, 321
for Technological Awards, report of, 605
Dock Labour Board, annual report, 733
Education and Careers Exhibition, 364, 605, 660

— Engineering Laboratory, activities and constitution of Steering Committee for, 583; report on measurement of large water flows, 643; study on design of relief valves for power circuits, 685; circuit design in oil hydraulic equipment, 749; test rig for head loss characteristics of fittings, 749; test rigs for pumps, 763; see also Mechanical Engineering Research see also Mechanical Engineering Research Laboratory

Federation of Ironmongers, Diamond Jubilee Conference; Distributive thaw, by N. A. H. Stacey, 787 National Gas and Oil Engine Co., Ltd., GS34 free-piston gasifiers for turbine-driven compressor plant, 49; free-piston gasifier,

- Gas Turbine Establishment, all-radiant air heater for (Birwelco), 423 Industrial Fuel Efficiency Service, oil-firing course, 73

Course, 73
 Safety Conference, accident prevention progress, by M. Robert, 701
 Institute of Building Research (Denmark), durability and maintenance of concrete structures on Danish Railways, by A. Jeppesen, 384
 National Institute Economic Raylaws preventions

National Institute Economic Review, new publication, 99
National Institute of Economic and Social Research, National Institute Economic Review, new publication, 99; budget recommendations, 418

of Industrial Psychology, conference on

selection and training of inspectors, 125 National Iranian Oil Co., contract for Arcon prefabricated buildings for, 391

Joint Advisory Council, report on restrictive practices, 235 Lending Library for Science and Technology, site for, at Thorp Arch, 123, 458

Office Management Association, automation bibliography, 475; glossary of automation terms, 475 National Physical Laboratory, straightnessmeasuring apparatus for cylindrical com-ponents, 124; work on industrial noise problems, 234

Planning Association (US), nuclear power in Pakistan (report), 531; automation: impact on business and labour, by J. Diebold (report), 796
 Power Farming Conference (Harrogate), discussion on mechanisation in agriculture, 227

Reactor Testing Station, criticality of TREAT facility, 366
National Research Corp. (US), vacuum induction furnace, 627
— Council (Canada), study of damaging reactions in concrete by Division of Building Research, 128. See LETTER, 483; ground movement near trees planted in clay, 611; building in Northern Canada, technical report, 643
— Development Corp., annual report, 182; appointment of J. C. Duckworth as managing director, 331
— Science Foundation, Science Information

Science Foundation, Science Information News, 617

News, 617
Society for Clean Air, proceedings of Llandudno Conference (booklet), 227
Union of Teachers, annual guide to careers for young people, 364; National Education and Careers Exhibition, 364, 605, 669

Nationalisation in engineering industry, Labour Party's proposals, 629 — Iron and steel industry, Colin Hurry's

Iron and steel industry, Colin Hurry's survey on, 194
Steel industry, W. Benton Jones on, 135
NATO science studentships, discussion in Parliament on, 330
Natural frequency of cantilevered blade-type testpieces, effect of isolation on, 54
Natural gas, fluctuating demand for, 659
— Impact on gas industry in US, 232
— Industry, position and prospects of, 663
— Liquefaction and storage of, 232
— Production of, 233
— Reserves of, 232
— Sea transport to Britain of, 232

— Sea transport to Britain of, 232 — Tanks at Canvey Island (North Thames Gas Board), 232

— Tank, rupture of, 232

— Tank, rupture of, 232

— Well at Cousland (Midlothian), 232

— Quartz replaced by fused silica for spectrophotometer prism, 59

Nature Conservancy, activities of first ten years (booklet), 429

Naval Architects, Institution of. See

Institution Construction Research Establishment,

impact machine for, 800 Navigation, inertial, in solar system, by D. J. Cashmore, 679

Cashmore, 679

— Radio astronomy and, by C. M. Cade, 744
Navigational aid, Decca system, discussion in Parliament on, 143

— — on trawler Falstaff, 375
Navy, Royal. See Royal Navy

— United States. See United States Navy
Neal, R. H., & Co., Ltd., acquisition by Steel
& Co., 199; purchased by Steels Group,
595; crawler crane with cantilever jib, 664;
NL250 truck-mounted crane, 761
Nechleba M. hydraulic turbines (review) 617

Nechleba, M., hydraulic turbines (review), 617 Nederlandse Helicopter Industrie, Kolibrie twin ram-jet helicopter, 88

Needle bearings. See Bearings

Negretti & Zambra, Ltd., instrument servicing (trade publication), 474
Neill, James, & Co. (Sheffield), Ltd., Eclipse magnetic positioning unit for welding and fabrication, 570; Eclipse boring tool holders for English pattern lathes, 696
Nelson, Sir G., on English Electric Co., Ltd., 423

Nelson, G. H., awarded Benjamin Franklin medal, 142

Neoprene in bridge expansion bearing, 543

— Diaphragm, air control valve with (Air Automation), 717

— for Powergrip timing belt, 589

Nepal, Trisuli hydroelectric power project for, 803

NEPTUNE zero-energy water-moderated reactor, instrumentation for, 675
Neptunium oxides, properties of, 174
— Recovery of, 174
Netherlands, atomic energy programme, 80

— Speed limits in, 644

Networks, passive, synthesis of, by E. A.

Guillemin (review), 92

— Synthesis (Vol. 1), by D. F. Tuttle, Jr.

(review), 92

tron detector, scintillation counter as AWRE, 771

Flux distribution measurement across reactor core, 750

— Measurement in atomic reactor, 686

Sensitive ionisation chamber, 751 Source, Cockcroft Walton machine as, 770

Electrostatic generator as, 770 Spectrometry, transistorised data recording and anlysing system for (EMI Electronics), 182 Spectrum, measurement of, 770

— Time of night spectrometer, 770

New Nuclear Data 1957 Cumulation, USAEC,

New Rochelle Tool Corp., Thermatool high-frequency welding nead for aluminium

New Year Honours, 36 New York Airways, orders for Fairey Rotodyne vertical take-off aircraft, 328 New Zealand, atomic energy programme, 80

Bluff Harbour extensions, 671 Tait's electrical directory of, 1958-59 (review), 649

Newall Engineering, Russian orders for machine tools, 328
Newalls Insulation, Newtherm calcium silicate insulation, 503
Newcastle Central State

Newcastle Central Station, centralised signal-

ling system, 624
Newcomb, T. P., on brake drum temperatures in racing cars, 709

Newcomen Society, plea for firms' centenary or historical publications, 3; automotive inventions of Ettore Bugatti, by H. G. Conway, 200, 207

Newfoundland-Scotland cable, 418

Newfoundland-Scotland cable, 418
Newman Electric Motors, Inc., activities of, 724
Newman Industries, Ltd., electromagnetic disc brakes, 455; sales engineers course, 724; sales drive, 724
Newmarket Transistors, Ltd., manufacture of germanium transistors, 743
News Chronicle, 1959 competition for £5,000 for business investment, 207
Newtherm calcium silicate insulation (Newalls

for business investment, 207
Newtherm calcium silicate insulation (Newalls Insulation), 503
Newton Collins, Ltd., fettling bench with built-in dust extraction equipment, 722
Newton, G. C., Jr., analytical design of linear feedback controls (review), 252
Newton, Isaac. See Isaac Newton telescope Newton, K., the motor vehicle (review), 443
Newton Victor Ltd., brazing service, 264
Newtonian theory of axial elasticity, by A. N. Procter, 798 Procter, 798 Nicholls, H., on NATO science studentships,

Nichols Construction Co., geodesic dome, 473
Nicholson, T. V., on transportation and handling of iron ores, 593
Nichtlineare mechanik, by H. Kauderer (review), 475
Nickel alloy steels (trade publication), 283
— Wiggin, v. fluorine and fluorine compounds, 343
— AT, for phenol road tanker, 748
— Industry, position and prospects of, 8

Industry, position and prospects of 8
Phosphorus alloy coating, Kanigan process,

— from sea bed, 567 — Stripping bath, Niplex (Roto-Finish, Ltd.),

Nicrex welding electrodes (Murex), 556 NIFES. See National Industrial Fuel Efficiency Service

NIG Manufacturing Co., Zephyr photo-printing machine, 532 Night school in Russia. 235 Nimbus T3 diesel dumper truck (Thwaites Engineering), 730 Nimonic alloys (trade publication), 746

Nimonic alloys (trade publication), 746
Nimrod proton synchrotron for Rutherford
High Energy Laboratory, 772
1958 book of ASTM standards including
tentatives (review), 714
1960's Now, The (supplement), facing 512
Niobium. See Columbium
Niplex nickel stripping bath (Roto-Finish,
Ltd.), 284
Nira Tele-Tracer staff location system (Cass

Ltd.), 284

Nira Tele-Tracer staff location system (Cass Electronics, Ltd.), 357

Nitralloy steel wheel spindle on Churchill roll-grinding machine, 127

Nitrogen determination in steel (book), 411

— Hydride rocket fuel, 279

Nitrous oxide gas for tracing leaks in Martin

Nitrous oxide gas for tracing leaks in Martin aircraft fuel tanks, 659 Nixon, M., closing breaches in flood defences, 609

Nodal dampers for Explorer diesel-electric locomotive (Blackstone), 277
Noise (trade publication), 216

Absorbing acoustic pyramids (Marley). 653
Building Research Station's work on, 234
in drawing offices, 560
Exhaust of motor vehicles, discussion in Parliament on, 392

in flats, DSIR report on, 192 Medical Research Council's work on, 234 National Physical Laboratory's work on,

Shot, autocorrelation function and power

spectrum of nonstationary, by L. Hyvarinen (book), 586 of TU104 airliner at London Airport, 458 Nomograms for Chemical Engineers, by O. P. Kharbanda (book), 154

Non-ferrous foundries, committee on conditions in, 635

Non-inflammability, British Standards work

on, 201

Non-linear analysis, introduction to, by W. J.

Cunningham (book), 29

— Mechanics, by H. Kauderer (review), 475

Noral aluminium alloy for grain carriers, 749 Noratom A/S, atomic-energy consortium, 80 Norcross Ltd., annual report, 359

Nord-West Oelleitung oil pipeline, 663
Normalising. See *Heat treatment*Norman and Dawbarn, architects for Hawker
Aircraft factory at Squires Gate, 215

Norris Bros., Ltd., tooling and test rigs (trade publication), 586
Norris, Henty and Gardners, Ltd., 6LX auto-

Norris, Henty and Gardners, Ltd., 6LX automotive diesel engine, 60

Norris Warming Co., Ltd., air conditioning unit for deck mounting on ships, 762

North America, British Sales in, 723

North American Aviation Inc., X-15 upper atmosphere research aircraft, 361; Jupiter engine for Juno II space probe (Rocket-diese Division), 282, reactor agreement.

dyne Division), 388; reactor agreement with English Electric Co., Ltd., 735 North American railways, Bondarc resin-based

adhesive for rigid joints in long rails, 32 North Atlantic Treaty Organisation. See NATO North British Rubber Co., Powergrip timing belt for One-20 diesel dumper, 589

North-East Coast Institution of Engineers and Shipbuilders, economics of ships in port, by R. M. Thwaites, 34; shipowners' problems, by R. Munton, 530; nuclear-powered submarine cargo vessels, by J. A.

North east, trading estate employment statistics in, 363

in, 363
North Eastern Trading Estates, Ltd., employment statistics, 363
North of Scotland Hydro-Electric Board, generating capacity position and prospects, 34; capital investment plans, 145; contracts for Strathfarrar and Kilmorach scheme, 322; Loch Awe power scheme, 451, 463; annual report on electricity demand, 563; contractors for Loch Glashan scheme, 579

North Thames Gas Board, natural gas tanks at Canvey Island, 232; work on liquid methane, 428

Northern Aluminium Co., Ltd., aluminium busbars (trade publication), 746; aluminium alloys for grain carriers, 749; aluminium alloys for Cargo Lift vans and trudes, 741. trucks, 781

Northern region engineering buyers' guide, 1958-1959 (review), 310

Norton Tool Co., Ltd., 7½ ton high-speed hydraulic press, 198

Norway, atomic energy programme, 80

Reactors, 80 - Export Council of. See Export Norwegian Export Directory 1958-59 (review),

Notched-bar tests. See Impact

Notice extension for wage-earners of Associated Electrical Industries, 48

Notting Hill Gate underground station, reconstruction of, 383

Nottingham University, endowment of Hives Chair of thermodynamics by Rolls-Royce Ltd., 48

Novales rocket, and enhant into by F. T. D.

Nozzles, rocket, and exhaust jets, by E. T. B. Smith, 36

— Sampling, for flue gas, 286

— Sound Suppressing, for jet aircraft, 456

NRDC flat television tube, 128

NSU Prince motor car, 329 Nu-Gear gearbox attachment for hand drill (Bridges), 288

Nuclear Chemical Plant, Ltd., constitution and appointment of directors, 47

— Congress, preliminary notice, 395

Nuclear Data 1957 Cumulation, New, USAEC, 463

Engree Conf.

Energy Conference, British. See British
Courses, catalogue of, 395
Exhibition. See Engineering, Marine,
Welding and Nuclear Energy Exhibition
European Conference for Industrial Management on Industrial Prospects for. See European Conference for Industrial

Management Management
 Engineering courses. 395
 — See also Atomic engineering
 Nuclear Enterprises (GB), Ltd., formation of Saro-Nuclear Enterprises, Ltd., 176

Energy. See Atomic
Explosion. See Atomic
Fired superheater for Puerto Rico atomic power plant, 79 Fusion apparatus, Sceptre III A, experimental results of, 575
British work on, 205

Compression heating for, 703 Containment, electric fields for, 575 Containment systems, 575, 702 Course on (France), 575 Devices, 575

Devices, direct conversion to electrical energy in, 575

Fast and slow pinches, 702

Heating and containment for, 702 Mirror geometry to replace ZETA, 366 Position and prospects of, 606

Present state of research on, by Dr. B. F. J. Schonland, 598 Reaction cross sections as function of relative particle energy, 574
Reaction power density, calculation of,

References to, 608
Research in Russia, by Dr. I. N. Golovin, 702

Research stations, British, siting of, 205 Research in US, by Dr. V. Atta, 702 Research. See also Sceptre; Zeta

Toroidal pinch, fundamental problems — Gas engine, 427, 734 Nuclear Investment Co., Ltd., annual report,

Nuclear Materials, Journal of, new quarterly, 377

377
— Medical applications of, 302
— Physics. See Atomic physics
— Power. See Atomic
Nuclear Power Plant Co., Ltd., activities of Sir C. Gibb in, 100; R. E. McAlpine elected chairman, 176; activities of, 668
— Station. See Atomic
— Reactor. See Atomic
— Research emulsions, automatic scanner for (Barr and Stroud), 102
— European Organisation for. See Euro-

 European Organisation for. See European Organisation for
 Science abstracts, annual index to, 745 and Engineering, Australian Institute of. and technology, chair of, at R.N. College, Greenwich, 206

Technology (chemical) course, Imperial College, 492

— See also Atomic
Nucleus, collective motions of, 466
Numerals for electronic reading machines (EMI Electronics), 218

Nuts locking against vibration Palnuts

Nuts, locking, against vibration, Palnuts (trade publication), 554

— Self-locking, Philidas (trade publication),

Nuttall, Edmund, Sons & Co. (London), Ltd., Dartford-Purfleet tunnel, 579

Nylon belting for drop stamp tup, Roko, 504

— Coil bobbins for miniature transformers

(George Goodman, Ltd.), 653

Gloves for protection against abrasive materials (British Nylon Spinners), 453

Overalls for factory use (British Nylon Spinners), 453

Seals for buffers, Maranyl, 432 - Transmission belting, Roko, 504

## 

OAK Ridge National Laboratory, gas engine reactor system, 427, 734; GCR-2 reactor, 734

Research Reactor. See ORR
 Oates, J. A., automation in production enginering (review), 253

Obituary:
Angwin, Sir S., 568
Austin, H., 228
Bennett, F. S., 2
Brodic, J. L. P., 419
Chalkley, A. P., 568
Eckersley, Dr. T. L., 260
Emanueli, Dr. L., 292
Gibb, Sir C., 100
Gibson, Prof. A. H., 260. See Letter, 387
Hopkirk, K. R., 568
Mavor, Dr. J. B., 196
Michell, A. G. M., 260
Oswald, H., 68
Richardson, Sir O., 228
Robinson, I. V., 568
Sulzer, Dr. H., 68
Twyman, F., 356
Warner, L. W., 419
Williams, W. C., 356
Observatory, Royal. See Royal
Odishaw, H., handbook of physics (review), 681
OEEC. See Organisation for European Economic Co-operation
Off-peak floor heading, fallacies of, by H. H.
Rruce, 592. See Letter, 663

Off-peak floor heating, fallacies of, by H. H. Bruce, 592. See Letter, 663

Office Appliance and Business Equipment Trades Association, Business Efficiency Exhibition, 659, 698

Exhibition, 659, 698

Building with gold-anodised aluminium curtain wall, Hollywood, 804

New, in London, 234

Chair, "ideal," 685

Executives, to be more homely, 73

Machinery industry, position and prospects of 147

of, 147

— Manufacture by Canadian-Vickers Ltd.,

208 Oil burner. See Burner
— coal conversion into (BCURA), 613 from coal by low-temperature carbonisation, 428

Competition between coal and, 201 Consumption and refinery production, statistics, 631

oil-Crat oil-fired domestic boiler, 596

Engine. Se: Engine, diesel

Expeller (trade publication), 443

Exploration, 430

Offshore, Persian Gulf, 431

Film bearings, shaft whirl with, 180

Filters, are they necessary?, by G. Wilkins, 544 544

544

Fires, compressed air for extinguishing, 620

Fired boiler. See Boiler

— Central heating, growth in, 73

— Firing, NIFES course on, 73

— Unit for boilers, MacFire, printed circuit for control system of (Urquharts), 592

— Fuel, heavy, direct-fired heater for (Foster Wheeler), 191

Oil gas processes plant for for Jenes (Hump

Oil-gas process, plant for, for Japan (Humphreys and Glasgow), 435

Oil hydraulic equipment, circuit design in, NEL, 749

Hydrocarbon, radiation effects on, 716 Marketing, by C. T. Brunner, 562 Mist detector (Graviner Manufacturing Co.). Port, Wilhelmshaven, 663

Prospecting, magnetometer equipped AC-3 aircraft for (Hunting Geophysics, Ltd.), Refinery, air pollution by, discussions on, 11
— Caltex (UK) Ltd., withdrawal of planning permission application at Southampton, 701

Fawley, pneumatic hose-handling equipment, 563

Output statistics, 662
Plans for new, 662
Production statistics, 631

— Floduction statistics, 662
— Size and output details, 662
— Stanlow, pipeline for, 663
— Stanlow, Udex aromatic extraction unit for (Universal Oil Products), 620

Stanlow, underground pipeline, 611
Release from shale beds by atomic explosion, 206 Reserves, search for new, 430

Switch. See Switchgear

Terminal at Shatt al Arab, 495

Transport, Dracone D1 towed flexible cargo vessel for, 381

Velocity indicator, miniature, by A. J. S. Baker, R. Tourret and J. T. Jones, 82
W. Walker's Century No. 6, in gear test, 306
Well drawworks, MW48 asbestos friction material for (Ferodo Ltd.), 780
See also Lybrigation, Paraffer, Paraffering

— See also Lubrication; Paraffin; Petroleum
Oilfields, Lake Maracaibo, Atlas 400 ton
floating crane for, 595
— Olobiri (Nigeria), 430

Oldbury-on-Severn atomic power station, site application for, 426 Older persons, work for, discussion in Parliament on, 330

ment on, 330
Oleo Pneumatics, Ltd., Maranyl nylon seals for buffers, 432
Oliver, D. R., review of Reports on Progress in Physics, 93
Olobiri oilfield (Nigeria), 430
OMFBR. See Atomic reactor, organic-moderated fluid-bed
Ompilys See Rus

Omnibus. See Bus

— Trolley. See Trolley bus

OMR. See Atomic reactor, organic-moderated
One-20 diesel dumper with Powergrip timing

belt, 589
O'Neill, D. B., consulting engineer for Hawker
Aircraft factory at Squires Gate, 215

Aircraft factory at Squires Gate, 215
Ongar Radio Station, remote-controlled transmitters for, 307
Onia-Gegi catalytic oil-gas process, plant for, in Japan (Humphreys & Glasgow), 435
Open-hearth furnace. See Furnace
Opera on space flight, 457
"Operation Chimney Plume," fog tests by CEGB-Fairey, 30. See Letter, 99
Operations research for printing factory of Perivan Group, 690

Sunrise, atomic reactor programme, 426

Surrise, atomic reactor programme, 426
 Operational research course, London School of Economics, 258
 Societies, Federation of. See Federation

Operator control in oil engine production (Rolls-Royce), 811

Ophitron microwave oscillator (GEC), 774 Opportunities for qualified men, 1959, directory of (Bowes and Bowes), 29

Optics and spectroscopy, glossary on, 475 OR 339 strike aricraft project, 41

Oram, G. C., works manager (production services), Appleby-Frodingham, 423 Ore carrier, *Morar*, for Scottish Ore Carriers, Ltd., 349

Position and development prospects, 593
Special-purpose, 593
Unloading, by Dr. H. R. Mills, 593 Chromium, purchase of Russian, by US, 387
 Field, Russian, Terylene-rubber conveyor belting for (BTR Industries), 284

Handling at East Moors Works, by T. Jenkins, 593 Installation, Muller-Hanna, by F. D.

Vines, 593

— at Margam Works, by J. E. Robson, 593

— at Seven Islands, by D. H. Sharp, 593

— Iron, deposits in Russia, 797

— Direct reduction into sponge iron, HyL process (M. W. Kellogg), 159

— Handling in Great Britain, by T. V. Nicholson, 593

— Handling meeting of Iron and Steel

Handling, meeting of Iron and Steel
Engineers Group, 593
Preparation, 593

- Ships for, unloading, by Dr. H. R. Mills, 593 Shipment, 593

Transportation, 593 Transportation in Great Britain, by T. V.

— World situation, by C. R. Wheeler, 593
— Unloading at Port of Rotterdam, 593 Orenda Engines, Ltd., development of Iroquois turbojet aircraft engine, 26

Organic materials, vapours from, corrosion of metals by, by V. E. Rance and H. G. Cole (book), 343
Organisation of American States, activities of,

— for European Economic Co-operation, conference on industrial prospects in nuclear-energy (Stresa), 176, Policies for Sound Economic Growth (10th annual economic review), 289; publications of, 475; 4th symposium on organisation and administration of applied research, 499; administration of applied research, 499; report by Secretary General on work of, 597; Industrial Design in the United States (publication), 624; fitting the job to the worker (book), 746; See also European Productivity Agency; European Nuclear Energy Agency

Nuclear Energy Agency

— International, yearbook, 1958-9, 283

— Large scale, and change: oil marketing, by

C. T. Brunner, 562

Oriana liner, aluminium superstructure in (Vickers-Armstrongs Ltd.), 505

(Vickers-Armstrongs Ltd.), 505
Orient liner Oriana, aluminium superstructure in (Vickers-Armstrongs Ltd.), 505
Orifices, small, "Probe-Lite" inspection lamp for (Morris and Ingram), 4
Orion "do it yourself" astronomical telescope kit (W. Ottway & Co., Ltd.), 416
Orpheus 803 turbojet engine, manufacture under licence by German Federal Republic 604

lic, 604

— B Or 12 turbojet aircraft engine, brief details of, 374

ORR research reactor, Oak Ridge, 462 Oscillator, audio frequency (trade publication),

Microwave, Ophitron (GEC), 774
Two-phase decade (Muirhead), 70
Oscilloscope, Infinite Persistence Solarscope

Oscilloscope, Infinite Persistence Solarscope (Solartron), 70
Osram Lamp Development Laboratory, work in progress at, 85; quartz envelope light source, 85; laboratory study of mass production, 85; reflector projector lamp, 85; effect of vibration and shock on lamps, 85
Oswald, H., obituary, 68
Otis Elevator Co. escalators for Notting Hill

Oswald, H., obituary, 68
Otis Elevator Co., escalators for Notting Hill
Gate underground station, 384
Otter floor cleaning machine (British Vacuum
Cleaner & Engineering Co., Ltd.), 256
Ottway, W., & Co., Ltd., Orion "do it yourself" astronomical telescope kit, 416
Otway, F. O. J., on monorail for London
Airport, 567
Outboard propulsion unit, Harbourmaster, for
fire float, 622

fire float, 622

Output printing machine, electro-hydraulic, for computers (Creed & Co., Ltd.), 241 Oven, electric, with external fan and heater (Hedin), 632

Gas-fired forced-convection trolley-loading (Barlow-Whitney, Ltd.), 422

— Industrial, gas-fired tray-loading (Barlow Whitney), 664

Overalls, nylon, for factory use (British Nylon Spinners), 453 Overload rating for human beings, by K. F. H.

Murrell, 364 Overseas information services, White Paper on,

Scholars scheme of FBI, 537
Science Students Association, activities of,

Overspeed trip for reciprocating engines, by R. Malpas and O. P. Woodroffe, 508

Owen, Sir L., member for production (designate), UKAEA, 427; on atomic power prospects in Australia, 463

prospects in Australia, 463
Owen Organisation, formation of private company in Bombay, 177
Owen, T., on house magazines, 364
Oxford English Dictionary, list of words for earlier references, 553
Oxford motor car, Series V (Morris), 464
Oxford Road railway station, Manchester, timber conoid roof for, 408
Oxides, cobalt, for catalytic combustion of exhaust gases, 684
— of heavy elements, properties of, 174
Oxley, Dr. P. L. B., on controlled shot peening, 222

Oxygen cutting machine, Hancomatic, 785

— in iron and steelmaking in Russia, 797

— Isotopes, separation of, 204

Liquid, storage cylinders (British Oxygen Gases), 684

- in pre-refining of hot metal for electric arc furnace (Brymbo), 657 Rocket fuel, 279

— Tonnage plant at Brymbo Steel Works, 658 Ozalid Co., Ltd., Printmaster photocopier, 696 Ozhennite alloy, corrosion resisting properties,

Ozonair Ltd., Ozotex throw-away air filter, 381 Ozone rocket fuel, 279 Ozotex throw-away air filter (Ozonair), 381

PACERA jigsaw (W. J. Meddings, Ltd.), 729 Packaging, aerosol, for domestic use, 448

— Centre, Tuflite hair packaging material at, 780

780

Exhibition, International (Amsterdam), preliminary notice, 369

Material, hair, Tuflite (Xetal Products), 780

Pressurised, for domestic use, 448

Training conference (New York), 177

Packers Supply Co., Ltd., HSD tensioner for strapping bands, 293

Packing, gland, extractor tool for, free offer of (Crane Packing), 312

Paper (trade publication), 283

Lascarflon, in asbestos and ptfe (Beldam Asbestos), 503

in warehouse of Benton & Stone, 721

— in warehouse of Benton & Stone, 721
Padiham B power station, hyperbolic cooling towers for (Mitchell Construction), 579 Paint, bituminous, Blackpete (trade publication), 650

Fungicidal, Mercian (Farrow & Jackson),

— Luminous, 497
— Luminous, 497
— Primer, Pitan (trade publication), 586
Painters, great, Plain Words on, 630
Painting, pretreatment, tannating process, 555
Pakaway refrigerator, functional design of, 692
Pakistan, atomic energy in, 110
— Power in, prospect for (report), 531
— Planning in, PEP, 531
— Steel mill at Multan, 791
— Taunsa Barrage opening, 473

Taunsa Barrage opening, 473

Taunsa Barrage opening, 473
Water and power authority. 495
Palletising, bricks, automatic car loader for (Bradley & Craven), 454
Palnut Co., Ltd., Palnuts for locking against vibration (trade publication), 554
Panel, air filter, Super-Vee (Vokes), 760
Honeycomb composite, flaw detection in (Martin Co.), 284
Pannett, W. E., radio engineering formulae and calculations (book), 217
Panorama Equipment, Ltd., dust protector (trade publication), 216
Pantograph, Faiveley, for railway electrification

Pantograph. Faiveley, for railway electrification (J. Stone), 134

Paper, drawing, translucent, Duralax (Hall Harding), 345

— Guillotines, Giant (Furnival), 808

— Industry, British (1495-1860), industrial growth, by D. C. Coleman (book), 61

— Mica insulation, Samica (trade publication), 746

Packing (trade publication), 283
 Printing, Ammonax (Hall Harding), 345
 Towels (Bowater-Scott Corp.), 453
 Paraboloids, hyperbolic, 643
 — for roof of Commonwealth Institute, 804

Paraffin wax pumping and distribution at Price's Patent Candle Co., Ltd., 156
Parallax work with Isaac Newton telescope at Royal Observatory, 341
Paralloy Forging Quality cast pipe fittings (APV Paramount), 504
Paratroopers, static line retriever system for

(APV Paramount), 504
Paratroopers, static line retriever system for, on Hercules aircraft (Lockheed), 374
Paris, industrial decentralisation in, 3
Parke, N. G., III, guide to literature of mathematics and physics (review), 310
Parker & Dannen, Ltd., tea-making automatic vending machines, 325
Parker, Frederick (Canada), Ltd., formation of, 509

Parkin, P. H., on noise in flats, 192
Parking, by G. Baker and B. Funaro (review),
777

Blue Zone system, 195

— Blue Zone system, 195
Parkinson, A. C., on first year engineering drawing (book), 29
Parkinson Howard, Ltd., access roads for Volta River project, 804
Parkinson, Sir Lindsay, & Co., Ltd., Hawker Aircraft factory at Squires Gate, 215
Parr, G., on technical writer (book), 123
Parsons, C. A., & Co., Ltd., death of Sir C. Gibb, 100; new appointments to Board, 135; export achievements of Sir C. Gibb, 135: contract for turbo-generators for 135; contract for turbo-generators for Tennessee Valley Authority, 199; tender for 500 MW turbogenerator for US. 328; purchase of turbogenerator by Tennessee Valley Authority, 456; nuclear exhibits at Engineering Exhibition, 490; annual

report, 668 Parsons Memorial Prize award, 299 Part-time technical courses, student wastage in,

Particle accelerator. See Accelerator

— Charged, analysis of, 770

— Counter and sizer machine, electronic, Casella, 647

- Emission, focusing for observation of, 770 - Size distribution, ring slit sifter for, 70 - Solid, atmospheric pollution by, by Dr. D. H. Grindell, 350

— Spectrograph, magnetic, 77!

— Spectrometer, magnetic, 77!

— Xi-zero, discovery of, 367

Paste, sealing (trade publication), 283

Patchboard (Woden Transformer Co. and T. S. Precision Engineering), 421 Patents, designs and trade marks, comptroller-general's report, 758

Paterson, S., review of Science of High Explosives, by M. A. Cook, 28

Patrol boat Brave Borderer with gas-turbine engines, 52
Patten, B., Melbourne's music bowl, 610

Pauli principle for superconductivity, 465 Pavilion, Philips, at 1958 Brussels World Fair (review), 778

(review), 778
Pavoir floors at Heinz factory at Kitt Green (Acalor), 578
Paxman diesel engines. See Davey, Paxman Pay claim by air traffic control officers, 73
— Offer to Civil Service clerks, 73
Pay, R. G., review of Dictionary of named effects and laws, by D. W. G. Rallentyne and L. E. Q. Walker, 311
— Ratio of woman-to-man, 489
— Research Unit, report on Civil Service clerks, 73
— See also Income; Salary; Wages
Paying for the Railways PEP broadsheet, 2

Paying for the Railways, PEP broadsheet, 2 Payne Products International. Ltd., Diavite Microtester for measuring surface finish,

PBR reactor. See Atomic reactor, high-tem-perature gas-cycle

Peaceful Uses of Atomic Energy, 2nd Inter-national Conference on. See Atomic Energy, Peaceful Uses of

Peake, H., on Steel Co. of Wales, Ltd., 71

Pearce, R. S., & Co., Ltd., Autopark (trade publication), 185 Peco Machinery Sales (Westminster), Ltd., diecasting machines for semi-automatic

casting flactifies for semi-automatic casting of light metals and brasses, 196; pressure diecasting machine, 722

Peers, J., and Associates, Technical Advertising Agency—What it is, What it Offers (book), 57

Pegasus computer for floor beam section determination, 18
Pegson, Ltd., Pegson Marlow centrifugal pump for mines, 634

Pegson Marlow centrifugal pump for mines (Pegson), 634
Pei, Prof. M., on need for universal language,

Peirson & Co., Ltd., steelwork for Heinz factory at Kitt Green, 577
Pemex, gas liquefaction plans, 663
Pendred, B. W., Kempe's Engineers' Year-Book, 1959 (review), 649
Penney, Sir W., member for scientific research UKAEA, 427; work at AWRE, 765
Pennsylvania Power & Light Co., withdrawal from aqueous homogeneous reactor project, 79
Pension, dockers' claim for, 48

Pension, dockers' claim for, 48

— Schemes, 299
PEP. See Political and Economic Planning PEP. See Political and Economic Framing Pepsi-Cola Bottling Co., vending machines, 266 Perf-A-Matic rotary perforator for commercial stationery (Gordon & Gotch), 262 Perforator, rotary, Perf-A-Matic, for commer-cial stationery (Gordon & Gotch), 262

Periodicals, exports of, discussion in Parliament on, 458
Sales overseas, discussion in Parliament on,

Perivan Group, Ltd., flowline production in new printing factory, 690
Perkins Engines, Ltd., reorganisation of Euro-

pean export organisation, 787

Perkins, F., Ltd., take-over bid by Massey-Ferguson, 135; 270D direct injection diesel engine for agricultural, industrial and marine applications, 165; appointments to board of, 328; changes in board of, 328; staff planning, 517; formation of Perkins Gas Turbines, Ltd., 764

Perkins Gas Turbines, Ltd., formation for

Perkins Gas Turbines, Ltd., formation for Solar gas-turbine manufacture, 764 Perkins, John M., & Smith, Ltd., Safe-D-

Perkins, John M., & Smith, Ltd., Safe-D-Speeder reduction gear for electric hand drills, 480

Perkins, W. T., elementary telecommuncations examination guide (book), 217

Permagon Press, Solid State Physics USSR, 617

Permali Ltd., Dialam bushings for electrical apparatus, 557

Perrin, J. F., on Mancur spring balance, 355. See Letters, 419, 531

Perry, J. H., engineering manual (book), 746

Perry, J. H., engineering manual (book), 746
Perry, R. H., engineering manual (book), 746
Perseus computer (trade publication), 650
Persian Gulf, deep-water berth for super-tankers, 231

— Offshore oil exploration, 431
Personality, quality in, Plain Words on, 630
Personnel bridge at Heinz factory at Kitt Green,

Decontaminator, Bassaire, 415

Perspex models for crankcase deflection measurement, 304

Table 1797

Table 17

— of frigate gear case, 786

Peruz, Dr. M. F., on life in molecular terms, Pescara GS34 free-piston gasifier (Alexander

Stephen), 134

— Free-piston gasifiers for ore carrier Morar (Free Piston Engine Co.), 349

Petrochemicals plants at Fawley, 24

— Project at Brindisi (S. Italy), by Montecatini Chemical Co., 509 Petrol fires, compressed air for extinguishing,

Motor. See Aircraft engine; Motor-car engine; Motor boat; Tractor
Pump, self-service, 369
See also Motor spirit

See also Motor spirit
Petroleum Equipment, Council of British Manufacturers of. See Council
— Deferred terms for, 628
— Industry handbook, by G. Sell and H. A. Dossett (book), 217
— Position and prospects of, 796
— Statistics 631

— Statistics, 631

— Information Bureau, United Kingdom
Petroleum Industry: Statistics, 631

— See also Oil; Paraffin; Petrol

Phase shift, apparatus for measurement of (Servomex), 70 Phenol-formaldehyde resins for reinforced plastics bearings, 27

— Road tanker in AT nickel, 748

Phenolic resin binder for reinforced plastic bearings, 2

Philidas self-locking nuts (trade publication), 554 Philips pavilion at 1958 Brussels World Fair

Philips pavilion at 1958 Brussels World Fair (review), 778
Type PW7000 gas liquefying machine for cooling systems (Research & Control Instruments, Ltd.), 697
Phillips Bros. & Ellis, Ltd., pneumatically-operated hot press marking machine, 358
Phillips, G., on atomic spin, 743
Phillips Petroleum Co., SPERT-III reactor, 79
Philosophical Transactions of Royal Society, contents lists of, 501 contents lists of, 501

Phosphating with case-hardening compared with Sulfinuz process, 117

Comparison with Sulfinuz process, 118 Phosphor luminescent crystals, mechanism of, 497

— Preparation of, 497 Photocell. See *Photoelectric cell* Photocopier, Printmaster (Ozalid), 696

Photocopying and developing machines, Conquest bench-type (Hall Harding, Ltd.), 389

— Machine, Bandavelop (Block & Anderson),

Photoelectric alarm for flow meters (Rotameter), 633 Cells in fuel consumption test equipment, 200

- Semiconductor, 743

Photograph Almanac, British Journal, 1959, by A. J. Dalladay (review), 649

— Continuous production of, plant for (Photome Studios, Ltd.: Autophoto Co.),

Selection of, by F. H. Smith, 123
 Photographic record of droplet disintegration, by Dr. R. A. Collacott, 440
 Photographing machine, automatic, 325
 Photography, commercial and industrial, by D. Charles (book), 618
 Photography represents a computer for civil.

Photogrammetry-electronic computer for civil engineering problems, DTM system, 751 Photome Studios, Ltd., automatic photographing machine, 325 Photometer, flame, for analysis in boiler house

- Signist and Weiss type UP21D (Southern Instruments, Ltd.), 533
Photon source, samarium 153 as low-energy, 395

Photoprinting machine, Zephyr (NIG Manufacturing Co.), 532
Photoswitches (trade publication), 802
Phrases, catch, Plain Words on, 130
Physical laws and effects, by C. F. Hix, Jr., and R. P. Alley (book), 746

Society, reports on progress in physics (Vol. XXI), by A. C. Stickland (Ed.) (review), 93; year book, 1958, 310; hydrogen bubble chambers, by Dr. N. C. Barford, 367; conference on collective motions, 465; discussion on musical pitch by Acoustics Group, 695

Exhibition, preview of exhibits at,

- Exhibition, preview of exhibits at, 69; exhibits at, 102
Testing at elastomers research laboratory of

Du Pont Co. (United Kingdom), Ltd., 684 Physicists, matrix theory for, by J. Heading (review). 60

Creview, 60

Special relativity for, by G. Stephenson and C. W. Kilminster (review), 410

Physics, atomic. See Atomic physics

Handbook of, by E. U. Condon and H. Odishaw (review), 681

Institute of. See Institute of Physics

Literature guide, 185

Literature guide, 185 and mathematics, guide to literature of, by N. G. Parke III (review), 310

Modern, principles of, by A. P. French (review), 502

(review), 502

— Reports on progress in (Vol. XXI), by A. C. Stickland (Ed.) (review), 93

— Solid state, USSR (publication), 617

— See also *Physical Society*Piccolift fork truck for confined spaces (G. Hunter (London), Ltd.), 760

Pickering, R. Y., & Co., Ltd., Erman's rolling hatch covers, 349

Pickups, pressure, for aircraft industry (CEL)

Pickups, pressure, for aircraft industry (CEC),

Pidd, G. S., on viscous damper and its vector diagram, 784Pierhead Ltd., prestressed concrete beams for

Heinz factory at Kitt Green, 578
Piezoelectrics, commercial production of (Bush Crystal Co.), 345 Pig iron, output of, 694
Pike, E. W., on air traffic control problem, 67
Pile casings, helically welded, Driam machine
for, 804

Prestressed-concrete, at Hull docks, 670

- System for stamp shop at Hawker Aircraft factory at Squires Gate, 213

- Welded steel, stress relieving of, 651

Pilkington Bros. Ltd., float glass process, 120;

Armourplate toughened glass (trade publication), 377; larger sheets of toughened glass, 379

Pilkington, L. H. A., review of Glass Engineering Handbook, 29 Pilots, air transport, training of, 458

— Space, monkeys as, 331 Pins, cotter. See Cotter-pins Pinch device, fast, AWRE, 703 Effect in plasma heating and confining, 702
Machines, direct conversion in, 575

— Electron energy loss mechanism in, 575

— Toroidal, fundamental problems of, 575

Pinions. See Gear; Gearing

Pioneer I lunar probe, summary of details of,

II lunar probe, summary of details of, 616

III space probe, summary of details of, 616
IV lunar probe, 322, 360
Lunar probe, summary of details of, 616 Lunar probes, value of, 333

Pipe bending (trade publication), 474

— Connections, high pressure, Ruston-Grayloc, 636

Coupling, demountable vacuum-tight, by W. P. White (book), 92

— Quick-action, for pipelines (Simon Handling Engineers), 505

Pipe coupling, swivel, for hydraulic systems (Avica Equipment), 621. See Correction, 720

Fittings, cast, Paralloy Forging Quality (APV Paramount), 504
Flanges, cast iron, tool for machining (Kitchen & Wade, Ltd.), 295
Manifolds, analysis of flow from, by Dr. E. Markland, 150
Straight air flow in friction charts for by

Straight, air flow in, friction charts for, by R. H. Young and J. M. Gasiorek (book),

746

Structures, analysis of, for flexibility, by J. Gascoyne (book), 746
 Water flow in, formulae in graphical form

Welding, manipulator for on site (Quasi Arc), 222

- See also Tube

Pipeline for coal transport, 258

for effluent from Winfrith Heath, 394

for fuel supplies for Egypt, contract to
Mannesmann Co., 435

Oil, in Britain, 663

from Genoa to Switzerland and Germany, 356

Nord-West Oelleitung, 663

for Russian satellite countries, 758 Quick-action pipe coupling for (Simon Handling Engineers), 505

— Underground, Stanlow Refinery to Shell Chemical's works, Carrington, 611, 663

— Valve body fabrication (David Brown), 786

— Electrical actuator for remote control of (trade publication), 554

Pipework, underground, Stilag insulating sections for, 579
Piping, aluminium, for BR.2 reactor, 46
Pippard, Prof. A. J. Sutton, remarks on amalgamation of Institution of Civil Engineers with kindred societies, 707; remarks on education of civil engineers, 707
Piqua, organic moderated and cooled reactors

Piqua, organic moderated and cooled reactor project at (USAEC), 425
Pisa, leaning tower of, electropetrification, 73
Piston, free. See Free piston

Pitan metal primer (trade publication), 586 Pitching moment and subsonic drag characteristics of slender cambered bodies, by K. D. Harris (book), 778

Pittsburgh Corning Corp., Stay-Dry foamed glass insulation for piping, 183; properties and applications of Foamsil foamed glass,

Pitzmann and Pfeiffer, hydraulic deep drawing press, 601

Piwowarsky, E., Hochwertiges Gusseisen (Grauguss) (review), 216

Plane, hand shaper (Stanley), 64
Planets as radio noise source, 744
Planetary system, origin of, by Prof. R. O.
Kapp, 196, 257, 270, 323-324
Planning in Pakistan, PEP, 531

Planning, production (supplement), 526
Plansifter for grading stocks at flour mill of
Barnes Milling, Ltd. (Thomas Robinson),

Plant (trade publications), 443, 474
Plant, Sir A., Graham Clark Lecture, 385

Depreciation of, by W. Brownlie Hendry,

Design and process development, instrumentation and computation in, symposium,

- Engineers, Incorporated. See Incorporated Institution of. See *Institution* Work of, 331

Guide to trends in (supplement), 524 Plasma arc torch for spray forming of high-

temperature materials, 652

Containment field, 703

Gaseous, properties, of, 465

Heating and confining, AWRE, 703

and confining, pinch effect in, 702

Mechanism, by D. Reagan, 205

Ratio of energy released in, and supplies

- Ratio of energy released in, and supplied to, Research on making and containment of, 598
Theory, present state of, 574

- Thermonuclear, confined by magnetic field, 575

Plaster, gypsum, models for reinforced concrete design, 468 Moisture-combatting, Voboma 38 and 64

for, 587

— Reinforced, ultimated strength of models of, 468 Plastic buckling of plates in shear

reduction factor for. by B. Emslie (book), 778

Design, computer for calculations in, by W. J. Sutcliffe, 68
— of structures, 275

Plasticisers (Charles H. Windschuegl, Ltd.), 747 Plastics Abstracts, 311 Plastics bodied prototype sports car, Shamrock, 708 Casings, g

Casings, glass-reinforced, for Bedford diesel industrial units (W. & J. Tod, Ltd.), 505

Coachwork repairs (Automobile Plastics Co., Ltd.), 448 Coated steel, Stelvetite, applications of, 210

Covered copper tubes, Kuterlex, 556 Ekco, polystyrene moulding for refrigerator,

Frame, behaviour of, 275 Hulls for boats, 86-87

Industry, position and prospects of, 8, 662 Joint boxes, 588

Joint boxes, 588
Lampshades, Fildenex, 596
for motor vehicle wings and bonnets, discussion in Parliament on, 392
Moulds, ready-mixed compositions for (Kenilworth Manufacturing Co.), 588
Mouldings, Diakon for, 210
in passenger-carrying railcar for French Railways (Renault), 471
Portable X-ray equipment for (Marconi Instruments), 533
Protective cap for asbestos cement sheets.

Protective cap for asbestos cement sheets, Turnall, 495

Ready-mixed, for tooling (Kenilworth Manufacturing Co.), 588

Plastics, reinforced (trade publication), 746

Bearings of, manufacture properties and applications (Railko Ltd.), 27

— Sheet, mouldable, Resnit (Leicester, Lovell), 588

Review (trade publication), 746 Scales, architects', British Standard, 340
Tents, house building under, 272
Testing methods for (miscellaneous), British Standard, 59
Thermoplastic, 662

Thermosetting, 662

Tools, ready-mixed compositions for (Kenilworth Manufacturing Co.), 588
Trays and bins (trade publication), 474
Washer for asbestos cement sheets. Turnall,

Yearbook, British, 1959 (review), 649

Plate bending machine, vertical (Hugh Smith (Possil)), 570

— Rollers, Besco (F. J. Edwards), 454

— "Crowning," rolling defect, 754

— Levelling machines (Bronx Engineering), 390

Machine, 6-roll (Bronx Engineering), 762
Name, "Twinstik" adhesive for (Evode,

Plastic buckling of, in shear, values of reduction factor for, by B. Emslie (book), 778

Preparation for magnet sectors, 753
Problems, two-dimensional, relaxation methods for, by Dr. J. A. N. Lee, 752
Rolling, "crowning" defect, 754
Ships', flame-cutting machine with computer control for, 485
Steel, fabrication at David Brown, 785, 786
Welding for magnet sectors, 753

— Welding for magnet sectors, 753

Plateaus spheroid droplet, 440

Platework, welded, low temperature stress relieving, by J. C. Dixon, 651. See Letter, 695

Platform, mobile, H type, extending (Lencon

Platform, mobile, H-type, extending (Lenson Engineering Co.), 292

Platinax II platinum magnetic alloy (Johnson Matthey), 183

Plating, electro. See Electroplating

— Flame. See Flame-plating

Platinum chemical distillation plant (Johnson, Matthey), 747

Matthey), 747

Magnetic alloy, Platinax II (Johnson Matthey), 183

Plessey Co., Ltd., solid electrolyte tantalum capacitors, 70; American tours for apprencapacitors, 70; American tours for apprentices, 170; apprenticeships for girls, 170; development laboratory and mobile field research unit for hydraulic equipment testing, 549; triangular spindles from flat brass strip, 622

Plessey Nucleonics Ltd., equipment for detection of faulty fuel elements, 491

Plugs, fused, advantages of, 724

— Gauges, straightness-measuring apparatus, by F. R. Tolmon, 124

— Glow, for diesel engines (KLG), 496

Plus-Gas Co., Ltd., tannating process for paint pretreatment, 555

PLUTO atomic reactor, closed-circuit tele-

PLUTO atomic reactor, closed-circuit television for, 491

Plutonium-aluminium alloy, irradiation stabi-

lity of, 394 as atomic fuel, 109 Basic charge for (USAEC), 394

- Breeding in thermal reactors, 334
- Detection by gamma spectrometry, 236
- Exchanges with US, 731
- for fast breeder liquid-metal fuelled reactors, 317

for fission reactor study, AWRE, 795 Health hazards in handling, 236

Liquid, as atomic fuel, 314 Molten, for LAMPRE reactor, 303

Oxide, properties of, 174
Processing of, 174
Production, discussion in Parliament on, 731

Purchase by USAEC from UK, 394
Removal from living organisms with DTPA and BAETA, 302
242, properties of, 394 Uranium 235 exchange, UK and US, 703

PluViaC skin for air-house (Gourock Ropework Co.), 610

Plywood and aluminium canopy for Mel-bourne's music bowl, 610 — Sheets, Breswood, 739

World production, 183 See also Wood

PM-1 portable nuclear power plant, 735 Pneulec Ltd., Blo-shooter moulding machine, 722; SJ5 jolt squeeze moulding machine, 722

Pneumatic capstan winch, portable (Globe Pneumatic Engineering Co.), 358

— Conveying systems at flour mill of Barnes Milling, Ltd. (Thomas Robinson), 156

Conveyor, sonic-valve operated (Simon Engineering Group), 341

Drill. See *Drill*Hoists for Fawley Refinery, 563

- Hose-handling equipment at Fawley Refinery, 563

- Screwdriver, quiet (Atlas Copco), 485 - Slide feed, Besco, for power presses (F. J. Edwards, Ltd.), 295

Tools (trade publications), 93
See also under specific types of tool
See also Compressed air; Air compressor Pneumoconiosis, discussion in Parliament on,

Pneutronic level controller (trade publication), Pobeida motor car, 740

Pocklington canal improvements, 776 Point defects in metals and alloys (book), 475 Poisons, metallic fission product, removal of, 315

Poisson's ratio, relation to earthquake waves, 346

Poland, atomic energy in, 110 Reactors in, 110 Economic position, 727

Polar Start primer for diesel engines (MGA), 37 Polarograph, square-wave, Mervyn-Harwell (trade publication), 618 Polhill, Eng. Lieut. H. W., Queen's Commenda-tion, 605

Polishing of roadstone, by D. J. Maclean and F. A. Shergold (book), 343
Political and Economic Planning, Paying for the Railways (broadsheet), 2; Prospects for Nuclear Power (booklet), 427; Planning in Pakistan (broadsheet), 531; Free Trade Area negotiations, by M. Camps, 726
Politics in steel industry, 359
Pollard Bearings Co., Ltd., bearing equivalents (trade publication), 554; Max-Load high-capacity roller bearings (trade publication), 554

Pollitt and Wigzell Corliss valve steam engine,

Pollution, air. See Air pollution

River, synthetic detergent trials, 747

Sea, Fomescol emulsion breaking agent for reducing (Glovers (Chemicals), Ltd.), 474

Polonium, half-life of, by R. G. Tee, 259

210 as heat source for direct conversion to electrical energy, 98, 110

- as heat source in Snap III thermo-electric generator, 394 Polyester dough moulding material (Bakelite), 160

Resin van body (Samlesbury Engineering),

Polyethylene container, Handycan, for liquids

(Lacrinoid), 600

Plant at Fawley (Monsanto Chemicals), 24

Powder, Telcothene HD, for dip coating (Telegraph Construction & Maintenance),

— Yarn for ropes, 748
Polymer powder, uncoloured, Diakon as, 210
Polypropylene fibres production in UK, 748 Polystyrene moulding for refrigerator, Ekco Plastics, 345

Polytetrafluorethylene. See PTFE
Polythene insulated and sheathed electric cable for Southend Pier (Telcon), 374
Polyvinyl chloride for air-house with PluViaC skin (British Geon, Ltd.), 610

Rased sprayed film. Tetal, 578

Based sprayed film, Tretol, 578

Based sprayed film, Tretol, 578

Coated steel. See Stelvetite

for joint boxes, 588

Sheet for clean-room floors, 415

Sheet, Vybak Industrial, for Hydrotron vapour blasting equipment (Bakelite), 284

Welvic, for drainpipes and roof gutters (ICI), 416

Poole power station, operation tests on 60 MW turbo-alternator, 254
Population, world, future growth of (book), 331
Porges, F., on suggestion schemes, 3-4. See
LETTERS, 67, 99, 131

Port Fiji, fire fighting vessel Dautataro, 622 - of London Authority, silting studies, 392 - Oil, Wilhelmshaven, 663 Port of Rotterdam, Europoort Plan for, 62

— Muller-Hanna ore-handling installation at, by F. D. Vines, 593

Ships in, economics of, by R. M. Thwaites, Silting of, discussion in Parliament on, 392

Portable Welders, Ltd., Fararc 200 portable heavy duty arc welder, 37 Portal frames, Heycon, for helicopter hangar,

Portal, Lord, retirement from board of British Aluminium Co., Ltd., 328 Portland cement industry, accidents in, 671 Portsmouth Dockyard, floating dock for submarine *Dreadnought*, 80 New factories for Langstone area of, discussion in Parliament on, 493

discussion in Parliament on, 493
Portugal, atomic energy in, 110

British trade with, 234
Portuguese-English Dictionary, 343
Position and control of massive objects, by A. Tustin and others (review), 713
Positioning machine, tool, automatic electronically-controlled, Autoplot (Mullard), 5

Unit, magnetic, Eclipse, for welding and fabrication (James Neill & Co. (Sheffield)), 570

Post Office, General. See General Post Office Postal order dispensing machines, automatic, Poster for shipbuilding industry sales publicity,

Potassium, liquid, as atomic fuel, 314 Potential theory of unsteady supersonic flow, by J. W. Miles (review), 681

Potentiometers (trade publication), 650

Potter, J., review of Voice across the sea, by A. C. Clarke (review), 283

Potter, Thomas, Ltd., centenary and activities of, 231

Potters Bar railway tunnels, completion of, 707 Potting resin for electrical industry (Bakelite), 309

Poulsen, E., preparation of samples for microscopic investigation (book), 253 Pound (avoirdupois), international, standards

laboratories' agreement on, 35
Powder, beryllium, commercial techniques for, 412 Injector for desulphurisation and recarburisation of cast iron (British Oxygen Co.), 748

Metallurgy of ceramic-metal materials, symposium on, 90 Particle size distribution, ring slit sifter for,

Polyethylene, Telcothene HD, for dip-coating (Telegraph Construction & Maintenance), 748

Spray coating, 31-C (Metallizing Equipment Co.), 504 Power circuits, relief valves for, NEL study on,

Developments in Victoria, Australia, 707

Geothermal, Wairakei project, 398

Power Jets (Research and Development), Ltd.,
gas turbine for ore carrier Morar, 349;

patent agreement for sound suppressing nozzles for jet aircraft, 456

Ministry of, efficient use of fuel (review), 410

Plant. See Power station; Atomic power station; Hydro-electric

Policy, Government's, discussion in Parliament on, 201

Power Reactor Development Co., permit to build but not operate fast breeder reactor, 47

Spectrum of nonstationary shot noise, by L. P. Hyvārinen (book), 586
Station, atomic. See Atomic
Chimney plume fog tests (CEGB-Fairey), 30

- Civil engineering contracts, 579, 739 - Coal-fired, in East Midlands, site examination for, 419

Development position and prospects of,

145

— Drakelow C, plans for, 611

— Geothermal, Wairakei project, 401

— High Marnham, 200 MW turbo-alternator completed for, 594

— Hydro-electric. See Hydro-electric

— Mercure thermal electric, loan for, 791

— Mobile gas-turbine, for Russia (Ruston & Hornsby), 805

— Padiham B, hyperbolic cooling towers for (Mitchell Construction), 579

— Poole, operation tests on 60 MW turbo-alternator, 254

— Thermal efficiencies improved, 691

Thermal efficiencies improved, 691

West Thurrock, contract to Richard Costain, 804 Supplies, subsidising in underdeveloped countries, 530
See also Supergrid

 Systems, economic operation of, by L. K. Kirchmayer (book), 618 - and telecommunication lines, inter-ference between, by H. R. Klewe (review),

- Transmission. See also Gearing; Drive; Transmission

Power Vane air compressors (Consolidated Pneumatic Tool Co.), 634

— Water. See Hydraulic; Hydro-electric Turbines, hydraulic

Powergrip timing belt for One-20 diesel

Fernaster" packaged boiler (GWB are S " Powermaster"

Powers Samas Accounting Machines, Ltd., amalgamation with British Tabulating Machine Co., Ltd., 103, 167

Praise, Plain Words on, 226

Precipitator for burst fuel-element detection, 750

Dust, hydro (Blackman', 570
 Electrostatic, for Beyans Works (Swanscombe), discussion in Parliament on, 298
 Precision Components (Barnet), Ltd., plastics trays and bins (trade publication), 474
 Prepackaged, compodities, checking, hand-

Prepackaged commodities, checking, hand-book on, 745 Prepacking in warehouse of Benton & Stone, 721

Preparation of samples for microscopic investigation, by E. Poulsen (book), 253
Pre-refining of hot metal for electric arc furnace (Brymbo), 657
Previous proposed by the control of the c

Presil aerosol filler machine, 198 Press brakes, Besco-Truebend (F. J. Edwards), Press Equipment, Ltd., automatic production

strip cutting machines, 600 Horizontal, for wheel rim rolling (Henry Berry), 785 Hydraulic deep drawing (Pitzmann & Pfeiffer), 601

High-speed 71 ton (Norton Tool Co.), 198

Marking, pneumatically-operated (Phillips Bros. & Ellis), 358
Output, detector for counting (Burndept), 70
Power, Besco pneumatic slide feed for (F. J. Edwards Ltd.), 295
Shaw, 5,500 ton, for Hawker Aircraft factory at Squires Gate, 214
Shop foundations at Hawker Aircraft factory at Squires Gate, 212
Tool manufacture (David Brown), 785

Tool manufacture (David Brown), 785 ess, William, & Son, Ltd., twin-main boring for Hyde Park road improvement,

Pressed Steel Co., Ltd., development and activities of (book), 126; acquisition of site for factory near Swansea, 328

Pressure indicator, near Diesindicator for

Pressure indicator, peak, Diesindicator, for diesel engines (Dunedin Engineering Co.), Pickups for aircraft industry (CEC), 71

Reducing valves (Samuel Birkett, Ltd.), 761

Rock, in mines, by E. de St. Q. Isaacson (book), 475

"Pressure-Tested" diamond grits (Diamond Tool Research Co. Inc.), 309. See Correction, 588

Pressure vessels in carbon and low alloy steel, fusion-welded, British Standard, 59

— Fabrication at International Combustion, Ltd., 723

Pressurised packaging for domestic use, 448 Prestcold Packaway refrigerator, functional design of, 692 Preston By-Pass, AA breakdown vehicles for, 393

Frost damage to, 131, 171
Prestressed concrete. See Concrete, prestressed
Development Group, competition for concrete design, 190

Prestwick Airport, improvements planned for

Preussag, denationalisation of, 259 Prices, downward trend in, 251

— Fixing, cables, termination of, 691

— Restrictive Practices Court's ruling on agreements of Yarn Spinners Association,

"Just," policy of Servomex Controls, Ltd.,
3. See also Vol. 186

Price, Dr. P. H., on demonstration experiments in nuclear engineering, 141

— Reductions, 692

— Conference Incorporated Sales

— Conference, Incorporated Sales

Managrs' Association, 435

— Trend of, 451

Price's Patent Candle Co., Ltd., pumping and distribution of paraffin wax, 156

Priest Rapids Dam, tubular air coolers for (Heenan & Froude), 114

Prime, F. J. & T. E., new building for CIBA (ARL), Ltd., 707
Primer, Polar Start, for diesel engines (MGA),

Primer, Polar Start, for diesel engines (MGA), 37

Prinex, Ltd., Russian order placed with, 636; contract for machinery for Russia, 757

Printed circuit. See Circuit

Printed Circuits, Ltd., printed circuit for control system for MacFire oil-firing unit, 592

Printer, "Copyflo" automatic, for xerographic computer printing machine (Rank-Xerox), 241

Printing factory of Perivan Group, 690

— Machine, output, electro-hydraulic, for computers (Creed & Co., Ltd.), 241

— Photo-, Zephyr (NIG Manufacturing Co.), 532

— Xerographic, for computers (Rank Precision Industries), 241

— Machinery manufacture by Canadian-Vickers, Ltd., 208

— Paper, Ammonax (Hall Harding), 345

Printmaster photocopier (Ozalid), 696

Prism, spectrophotometer, fused silica for, 59

Probability of service failures of structural components, by I. J. Somervaille, 806

Probe, lunar. See Lunar

— Sampling, for flue gas, 286

— Space. See Lunar; Satellite; Space

"Probe-Lite" inspection lamp for small orifices (Morris & Ingram), 4

Proceedings of Royal Society, contents lists of, 501

Process control, analogue methods, 784

— Computers in, symposium, 783

Process control, analogue methods, 784

— Computers in, symposium, 783

— Development and plant design, instrumentation and computation in, symposium, 783

— Equipment, dynamic response of, computation of, 783

— Industries continuous operation and

Industries, continuous operation and control, 524
 Operating conditions, statistics for optimum, 783

Control, 324
Operating conditions, statistics for optimum, 783
Timers (trade publication), 746
Prockter, C. E., Kempe's Engineers' Year Book, Vols. I and II, 1959 (preview), 649
Procter, A. N., on Newtonian theory of axial elasticity, 798
Production control, computers in (ICT), 526
Engineers, Institution of. See Institution
Engineering automation, by J. A. Oates (review), 253
— Research Association, report on turning alloy steels with ceramic and carbide tools, 319; activities of, 521
Flowline, at printing factory of Perivan Group, 690
Planning (supplement), 526
Productivity control chart, 245
Decision-making and, comment on book by Prof. S. Melman, 1
and economy through welding technology (review), 501
in food industry, by M. Bogod, 690
Human element in, 429
Incentive, individual, "Help Your Self Game," 765
in machine tool industry, 111
Measurement, DSIR booklet, 744
— in heavy arc welded construction, by A. G. Thompson, 242
— Object and methods of, 244
Professional Engineers Appointments Bureau, 573
Profile cutter for tubes, Alyn (Saturn Industrial Gases), 534

Professional Engineers Appointments Bureau, 573

Profile cutter for tubes, Alyn (Saturn Industrial Gases), 534

Profiling, copying and routing machine (Rank Precision Industries), 455

Profits, company, "just price" policy on, 3. See also Vol. 186

— Trend of, 451

Profitability of different sized firms in Italy, 194

Programmes for Mercury computer, 53

Programming, linear, and associated techniques, by V. Riley and S. I. Gass (review), 310

— Methods and applications, by S. I. Gass (book), 554

Progress of Public Education in the USA, 733

Progress of Public Education in the USA, 733

Progress of Public Education in the USA, 365

— Score satellite, summary of details of, 616

— TSR2 reconnaissance aircraft, 39. See also 2

Projectile & Engineering Co., introducing employees to advertising campaign, 796

Projector lamp. See Lamp

Propellents, rocket, comparison and selection of, by F. Fitzgerald, 279

— Liquid, combustion in by D. Carton, 36

Propeller as sensing element in miniature oil velocity indicator, 82

Properties of materials at high rates of strain (book), 502

Propulsion of ships. See Atomic propulsion; Marine propulsion; Turbines; Propellers;

Propulsion of ships. See Atomic propulsion;
Marine propulsion; Turbines; Propellers;
Ship resistance Prospects for Nuclear Power (PEP booklet), 427
Prospect for Nuclear Power in Pakistan (report),
531

Prospecting of Wairakei geothermal power project, 398

Prospecting of Wairakei geothermal power project, 398
Protactinium, recovery of, 174
Protection (trade publication), 586
— Cathodic. See Cathodic
— for US electrical industry, 129
— in US industry, 272, 354
Protective cap, plastics, for asbestos cement sheets, Turnall, 495
— Clothing (RFD), 491
Proteus gas turbine for alternator set, 569
— Marine gas turbines for patrol boat Brave Borderer, 52
— 705 propeller turbine engine, overhaul life extension (Bristol Aero-Engines), 403
— Turbo-prop aero engines, twin cell test bed for (BOAC), 95
Proton beam, 769, 770
— in brain surgery, 302
— Synchrotron, CERN (Mayrin), 771, 772
— Magnet sectors for, at Rutherford High Energy Laboratory, 753
— Nimrod, for Rutherford High Energy Laboratory, 772

Proving ground for Volkswagen motor cars,

Psychological projects in industry, DSIR reports on, 672
Psychology, Industrial, National Institute of. See National Institute
PTFE and asbestos packings and jointings, Lascarflon (Beldam Asbestos), 503

— Coatings, resin-bonded, Emralon (Acheson-Colloids), 379

— Dispersons, resin-bonded, Emralon (Acheson-Dispersons, resin-bonded, Emralon (Acheson-Dispersons, resin-bonded, Emralon (Acheson-Dispersons, resin-bonded, Emralon (Acheson-Dispersons, resin-bonded, Emralon (Acheson-Dispersons)

Colloids), 379

Dispersons, resin-bonded, Emralon (Acheson Colloids), 379

Flexible hoses (William Rose, Ltd.), 780

Fluon, price reduction, 692

Insulated instrument wire (Siemens Edison Swan), 345

Public library. See Library

Relations Associations, American. See American

Relations Associations, American. See American
 — In US, 701
 — Utilities, subsidising in underdeveloped countries, by E. Black, 530
 Publications, business and specialised, of Great Britain (booklet), 217; (review), 310
 — Technical, service (trade publication), 586
 Puerto Rico Water Resources Authority, BWR power plant with nuclear-fired superheater, 79
 Pulleys, aluminium alloy, flame-plating for

Superficacti, 79
 Pulleys, aluminium alloy, flame-plating for wiredrawing machine, 59. See LETTER, 419
 Auto-manual, Sextet, for control of Thermotex glueing machine (Industrial Drives, Ltd.), 685
 Blocks, chain, with flameproof electrical equipment (Geo. W. King), 809

Pullin, R. B., on R. B. Pullin Group, 391 Pullin, R. B., & Co., traffic barrier (trade publication), 216 Pullin, R. B., Group, trading report, 391

Pulsator in Amsler 500 tons fatigue testing machine, 434

Pulsometer Engineering Co., Ltd., "Pacific" steam turbo-pump for boiler feed service (trade publication), 28; trading profits, 796 Pulverised coal. See Coal

Pumps (trade publications), 60

— Air. See also Air compressors

— Automatic variable delivery, H.P. (Hydraulics & Pneumatics, Ltd.), 486

— Centrifugal circulating water, for Chapel Cross atomic power station (W. H. Allen),

Cross atomic power station (W. H. Allen), 490

— Direct mounting horizontal (British LaBour Pump Co.), 485

— for irrigation (Wright Rain), 705

— Open vane impeller, for Manure Rain system, 705

— Pegson Marlow, for mines (Pegson), 634

— Single-stage, horizontal flooded suction (British LaBour Pump Co.), 485

— Three-stage high lift, for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 783

— Diaphragm, Layton (Henry Sykes, Ltd.), 697

— Distributor, for diesel engine fuel injection (CAV Co.), 17

— and engines (trade publications), 28

— Extractor, for gravimetric flue-gas sampling apparatus, 287

— Fuel, for AT diesel engines (Ruston & Hornsby), 305

— for Stephen-Sulzer 15,400 b.h.p. diesel engine, 688

— Glandless circulator, for German reactor, 491

— Heat, for house warming, 352

491
Heat, for house warming, 352
Hydraulic, batch production by Towler Bros., 625
for hydrostatic drive, 654

Bros., 625
— for hydrostatic drive, 654
— Metering, with automatic control (Distillers Co.), 633
— for paraffin wax (Megator Pumps & Compressors, Ltd.), 156
— Petrol, self-service, 369
— Positive displacement, for ships' water mains (Goodyear Pumps), 486
— Ram-type, marketing of (John Blake), 528
— Reciprocating oil-powered, Hydroflo Tangyes, Ltd.), 534
— Sampling, for gravimetric flue-gas sampling apparatus, 287
— Storage. See Hydro-electric pumped storage
— Submersible sump, air-driven (Blagdon-Durham, Ltd.), 455
— Test rigs, NEL, 763
— Three-stage, for hydraulic motion of spinning lathe (Leifeld), 263
— Turbo-, with water lubricated bearings (G. & J. Weir), 487
— Users' handbook, by H. Addison (book), 217
— Water-lubricated, "Safrax" (Saunders

Water-lubricated, "Safrax" (Saunders Valve Co., Ltd.), 352
Zero Leakage (Sigmund), 696
Pumped storage. See Hydro-electric pump (Saunders

Zero Leakage (Sigmund), 696
Pumped storage. See Hydro-electric pump storage
Pumping and distribution of paraffin wax at Price's Patent Candle Co., Ltd., 156
Punched card control of machinery, 526
Tape control of machinery, 526
Purex system for processing irradiated uranium, 173
Purfleet. See Dartford-Purfleet
Purifiers for flour mill of Barnes Milling, Ltd. (Thomas Robinson), 156
Tower, Bischoff, for desulphurisation in Lurgi gasification, 588
for Walsall Gas Works (Holmes), 594
Purox refractories (Morgan Refractories), 683
PVC. See Polyvinyl chloride
PWR. See Atomic reactor, pressurised-water
Pye, Ltd., withdrawal of US export privileges for six months, 488; instrument landing system for overseas airports, 604; instrument landing system for provises orders, 755
Pye Telecommunications, Ltd., Touchbutton Pyeway car radio, 104; withdrawal of US export provileges for six months, 488
Pye, W. G., & Co., Ltd., instrument switch, 70
Pyramids, acoustic, noise-absorbing (Marley), 653

Pyrene Co., Ltd., Home Fire Extinguisher, 480; RFVI hose reel foam fire extinguisher, 534; Pyromet dry chemical fire extin-guisher, 534 Pyromet dry chemical fire extinguisher (Pyrene Co.), 534

### Q

QUALITY of Surface Waters in Illinois, by T. E. Larson and B. O. Larson (book), 154
Qualter Hall & Co., Ltd., skip winding plant at Rufford Colliery, 338
Quantas Airways, jet services around the world, 296
Quarl blocks, materials and service experience, 619

619
Quartz crystals, synthetic, production by hydrothermal process, 219
— Envelope light sources (Osram), 85
— Natural, replaced by fused silica for spectrophotometer prism, 59
Quasi-Arc, Ltd., manipulator for pipe welding on site, 222; production planning of welding electrodes, 526
Quay, reinforced-concrete open-piled, at Hull

welding electrodes, 526
Quay, reinforced-concrete open-piled, at Hull
Docks, 670
Queen liners, replacement of, 482, 636
Queensbrough bridge across Fraser River,
contract to John Laing & Son (Canada),
Ltd., 391
QVF, Ltd., industrial glass sales in US, 251;
agreement with Corning Glass Works, 723

### R

R3-Adam atomic power plant (Asea), 425
R4-Eva atomic power plant (Asea), 426
RA-I atomic reactor (Argentine), 12
Racial questions in Australia, 142
Radar aerials, metal honeycomb sandwich (A. V. Roe), 375
— Aircraft identification by, 656
— Consort equipment for small craft (Marconi), 471
— Decca, for Vickers-Armstrongs airfield at Wisley, 737
— Equipment for trawler Falstaff, 375
— Marine, Escort (BTH), 407
— Unit system for (Kelvin Hughes), 262
— Range for X-15 upper atmosphere research aircraft, 362
— Station for aurora study at Hillhead, near Fraserburgh, 363
Radhakrishnan, G., exact flow behind a yawed conical shock (book), 311
Radiation accident, Vinca, recovery of victims of, 302
— Biological effects of, 236
— Effects on greases, 716
— on sylthetic fluids, 716
— on synthetic fluids, 716
— on synthetic fluids, 716
— en synthetic fluids, 716
— and protection, by D. E. Barnes and D. Taylor (review), 377
— Injury, legal aspects of, 237
— Level permitted in Savannah atomic merchant ship, 675
— Lubricants under, by Dr. C. G. Williams, 715
— Measurement, 236

Measurement, 236

Measurement, 236

Manitoring sarvice of Electronic Machine

715 Measurement, 236

Measurement, 236
Monitoring service of Electronic Machine Co., Ltd., 299. See Correction, 573
and mutations in living tissue, by Dr. H. E. Kubitschek, 537
Permissible levels and control, 236
Protection, consolidated report on, by 1. S. Eve, 236
Surce reactors, 460
See also Irradiation

Source reactors, 460
 See also Irradiation
 Radio astronomy and navigation, by C. M. Cade, 744
 Radio Corp. of America, licence to John Brennan, 264
 Chemical Centre (Amersham), reorganisation of, 395
 Engineers, British Institution of. See British Institution
 Information service for, 185
 Library service for, 185
 Engineering formulae and calculations, by W. E. Pannett (book), 217
 Equipment for trawler Falstaff, 375
 History of (film strip), 142
 Industry Council, RIC premium awards for technical writing, 573
 Manufacturing industry, position and

Manufacturing industry, position and prospects of, 146
 Motor-car, Touchbutton Pyeway, 104
 Noise, sources of, 744
 Receiver. See Receiver
 Research Station, observation of artificial satellites, 440

Receiver. See Receiver
Research Station, observation of artificial satellites, 440
Road services of AA, 297
Sales position of, 145
Sextants, solar, 744
Sources, celestial, 744
Station, Ongar, remote-controlled transmitters for, 307
Telephone. See Telephone
Telescope. See Telescope
Transistors for, 742
Transmister. See Transmitter
Tube encyclopaedia, international, 1958-59, by B. B. Babani (review), 310
Wave sources, 744
— of sun, study of spectra of, 121
See also Television; Radar; Valves
Radioactive deposits build-up in pressurised water reactors, 79
Dust, elimination of, 236
Fallout, discussion in Parliament on, 609
Isotopes. See Radioisotopes
Light sources, by Dr. E. J. Wilson and J. D. H. Hughes, 497
— Sources, radiation hazards, 499
— Sources, radiation hazards, 499
— Sources, uses of, 499
Materials, fires of, bulletins on, 395

Radioactive wastes, cæsium recovery from,

— Disposal by distribution in insoluble medium, 237

— Disposal at Lucas Heights, 394

— Disposal in Pacific Ocean, 394

— Disposal, pipeline for, at Winfrith, 394

— Disposal in the sea, 237

Radioactivity survey after Windscale accident, 237

Radioactivity survey after Windscale accident, 237
Radioisotopes, 395
— in agriculture, conference on, 537
— Applications of, classified index of, 395
— Beta-ray emitting, 497
— Exhibitions, UKAEA, 535
— at International Samples Fair, 563
— Manufacture, Hobson-AFRE honeycomb unit for, 491
— Service of UKAEA, reorganisation of, 395
— Standards for uranium, 110
— Trans-curium, production of, 174
— at work (publication), 395
Radiological Protection, International Commission on. See International Commission Radiophysics Laboratory (Sydney), equipment at, 121
Radome, glass-fibre, construction of (Goodyear Aircraft Corp.), 579
Rae, W. J. S., review of Telecommunications
— Economics, 342
Raft, life, inflatable, preloaded with passengers, 763
Ragazzini, J. R., sampled-data control systems

Ragazzini, J. R., sampled-data control systems (review), 617
Raglan Engineering Co. (1954), Ltd., 5-in centre lathe, 729
Rail, gantry, maintenance of, by D. B. Wilson, 220

Rail, gantry, maintenance of, by D. B. Wilson, 220

Long, rigid joints in, Bondarc resin-based adhesive for, 32

— Welded handling of, 739

Tube train, tests to determine impact of wheels on, 774

Rail-bus, diesel. See Railway trains
Railcar, passenger-carrying, for French Railways (Renault), 471

— Transmission unit, Mekydro (J. Stone), 134

— See also Carriage, railway
Railko, Ltd., manufacture of reinforced plastics bearings, 27

Railly, J. W., review of special relativity for physicists, 410

Railroad. See Railway
Railway accident. See Accident

— Board, Indian. See Indian

— Bridge. See British Railways

— Building at Hither Green, contract to Taylor Woodrow, 495

— Carriage. See Carriage; Railcar

— Closure proposals, 672

— Construction, centenaries in 1959, 10

— Conversion to roads, discussion in Parliament on, 143

— Danish, concrete structures on, durability and maintenance of, by A. Jeppesen, 384

— Electrification of. See British Railways

Freitherstreaments

Electrification of. See British Railways
Engineering works, delays due to, 298
French. See French Railways
Locomotive. See Locomotive
Marshalling yard. See Marshalling yard
Modernisation schemes, world, by Major-General L. Wansbrough-Jones, 531
Monorail. See Monorail
North American, Bondarc resin-based adhesive for rigid joints on long rails, 32
Officials, directory of (book), 92
Paying for the, PEP broadsheet, 2
Rails. See Rails
Reorganisation, White Paper on, 330
Repair shop, geodesic dome as, 473
Rhodesia, Beyer-Garratt steam locomotives, 52
Rolling stock, exports of, 78

motives, 52

— Rolling stock, exports of, 78

— Stock industry, position and prospects of, 77

— Stock, wood or all-metal, 428

— Stock. See also Carriage; Locomotive; Railcar; Wagon

— Running sheds, inclusion in Factories Acts, 535

Singalling See Signalling

Running sneas, inclusion in Factories Acts, 535
Signalling. See Signalling
South African. See South African
Station, King's Cross, Deccafax Visual Communication System at, 659
Newcastle Central, centralised signalling system, 624
Notting Hill Gate underground, reconstruction of, 383
Oxford Road, Manchester, timber conoid roof for, 408
Prefabricating, 611
Students' Association, world railway modernisation schemes, by Major-General L. Wansbrough-Jones, 531
Train brake. See Brake
Diesel passenger, in Scotland, 201
Electric, behaviour at very slow speeds, 218

Electric, wheel adhesion study at Willesden laboratory, 218

- Wiresden Jaboratory, 218
- Freight, Condor, 435
- Heating equipment (J. Stone), 134
- Underground. See London Transport
Executive; Underground
- Ventilation equipment (J. Stone), 134

— Tube. See London Transport Executive Underground
Tunnels, Potters Bar, completion of, 707

Underground. See London Transport Executive; Underground
 Wagon. See Wagon
 Workshops, redundancy agreement in, 573
 World, 1958-59, by H. Sampson (review), 474

Railwaymen's diesel manual, by W. F. Bolton (book), 311

Raimes, S., on electron gas in metal, 465
Rainbird, W. J., flow over delta wings at low speeds with leading edge separation, 311
Rainham Timber Engineering Co., Ltd., timber trusses for CIBA (ARL), Ltd., new building, 706
Rajasthan canal progress on, 804

Rajasthan canal, progress on, 804

Raleigh Industries, joint company for cycle manufacture in Ireland, 595
Rams, hydraulic, four-way valves for (Hutton & Mitton), 685
Ramjet. See Aircraft engine
Ramo, S., handbook of automation, computation and control (review), 713
Ramsgate, railway maintenance extensions, 776
Rance, V. E. on, corression, of, metals, by

Rance, V. E.. on corrosion of metals by vapours from organic materials (book), 343 Rand Corporation, studies on rocket flights and lunar conditions, 332

Rand Development Corp., activities in USSR,

Randolph, P., on planning the sales effort, 511 Rank Precision Industries, Ltd., "Xeronic" high-speed computer printer, 241; model JR copying, profiling, and routing ma-chine, 455; catalogue of cinema films for hire, 812

JR copying, profiling, and routing machine, 455; catalogue of cinema films for hire, 812

Rank-Xerox, Ltd., "Copyflo" automatic printer for xerographic computer printing machine, 241; Copyflo 5 microfilm xerography system for reproduction of drawings, 698

Rankin & Blackmore, Ltd., exhaust gas turbine for cre carrier Morar, 349

Ransome & Marles Bearing Co., Ltd., ball bushings for precision linear motion, 471

Rapi, Ing. F., body styling for Fiat motor cars, 329

Rapistan live roller conveyor (Manufacturers'

Rapistan live roller conveyor (Manufacturers' Equipment Co.), 665
Rashleigh Phipps & Co., Ltd., electrical work for new building for CIBA (ARL), Ltd., 707

Ravenscraig works. See Colvilles, Ltd.
Raw materials for engineering industry position and prospects of, 7
— Prices of, 8
Rawcliffe, Prof. G. H., pole-modulated tapped

Rawcliffe, Prof. G. H., pole-modulated tapped winding electric motor, 326
Ray, beta. See Beta
— Cosmic, studies of, 334
— See also Cathode ray: X-ray
Raykin Fender of rubber sandwich construction (Andre), 504
Raymond Concrete Pile Construction Co., Shatt al Arab oil terminal, 495
Raymond International, deep-water berth for supertankers in Persan Gulf, 231
Raytheon Corp., manufacture of Ferranti klystrons under licence, 135
Razors, electric, survey by Consumers Association, 160
Reactivity and atomic reactor control, 686

ciation, 160

Reactivity and atomic reactor control, 686

Reactor School, Harwell, course on control and instrumentation of reactors, 80; course for senior technical executives, 80;

Reader, E., & Sons, Ltd., steam power plant for underdeveloped countries 432

Reading machines, electronic, FRED and ALFRED (EMI Electronics), 218

Reading University programme-courtolled

Reading University, programme-controlled tractor, 112, 114
Ready reckoning, by H. Sticker (review), 801
Reagan, D., on plasma heating mechanism, 205
Reason for complex procedures, Plain Words

Reason for complex procedures, Plain Words on, 66
Rebinder, P. A., effect of surface-active medium on deformation of metals (book), 502
Recarburisation of cast iron, BOC Metallurgical Powder Dispenser for (British Oxygen Co., Ltd.), 748
Receiver. See Transmitter/receiver
Recession after-effects, 726
Recorder, electronic (trade publication), 802

Recorder, electronic (trade publication), 802

— for mine hoists (Metropolitan-Vickers Electrical Co.), 327

— Tape. Tape recorder

— Time, for components (Blick Time Recorders, Ltd.), 324

Recording apparatus, Midas, price reduction,

692
Data, transistorised system for neutron spectrometry (EMI Electronics), 182
Tape. See Tape recording Recruitment to Skilled Trades, by Lady G. Williams, 635
Rectifier, semiconductor, types and applications, 742
Silicon (trade publication), 650

- Silicon (trade publication), 650
Reddaway, J. L., impact machine for Naval
Construction Research Establishment, 800
Redheugh Iron & Steel Co. (1936), Ltd.,
low-temperature stress relieving of welded steel piles, 651

Redox system for processing irradiated uranium, 173
Reduction factor for plastic buckling of plates in shear, values of, by B. Emslie (book), 778

Gear. See Gear Redundancy agreement in railway workshops, 573

Dispute at Universal Pattern & Precisio Co., Ltd., 105 Increases in, 669

- Notice extension for wage-earners of
Associated Electrical Industries, 48
- Problem of, 669
Redux bonding for Argosy aircraft, 75
Reece P. O., on timber roof structures (report),
579

Reece P. O., on timber roof structures (report), 579
Reed & Mallik, Ltd., Loch Glashan hydroelectric scheme, 579
Reel overhead travelling crane with Vierendeel girders (British Industrial Engineering Co. (Staffs), Ltd.), 357
Rees Jeffreys Road Fund, grant for Traffic Engineering Fellowship, 643
Rees, R. L. L., feed water and boiler water standards in CEGB, 247
Refinery, oil. See Oil refinery
Refining. See also Pre-refining
Reflectors, reflex, by K. N. Chandler and J. A. Reid (book), 253
Reflex gauge glasses for boilers, longer life for, by W. R. Hoes, 31
Reflectors, by K. N. Chandler and J. A. Reid (book), 253
Refractory materials for boilers, by W. McClimont, H. M. Richardson and B. Taylor, 619
for marine boilers, research, 619

for marine boilers, research, 619

Refractory metals, spray forming with plasma arc torch, 652

Purox (Morgan Refractories), 683
Refrigerated beverages, vending machines for (Coca-Cola Export Corp.), 453
— Containers for marine use (J. & E. Hall), 570

Display cabinets, British Standard, 340
 Refrigerating unit for dry storage (Westool, Ltd.), 532

Refrigeration and air conditioning, by W. H. Severns and J. R. Fellows (book), 154 Refrigerators, domestic, Consumers' Association appraisal of, 628

— Electric, British Standard on, 628

— Pakaway, functional design of, 692

— Polystyrene moulding for (Ekco Plastics), 345

Sales position of, 145Semiconductor, 743

Regenerator efficiency, by Prof. O. A. Saunders,

Regie Renault, passenger-carrying railcar for French Railways, 471

French Railways, 471
Regional Advisory Council for Technical Education, changes in constitution of, 73
— Technical information centres of DSIR, 672
Regulator, electric voltage (BritishThomson-Houston), 326
Reheating furnace. See Furnace
— Voltage, automatic, type CVR7, 254
Reid, J. A., reflex reflectors (book), 253
Reinforced concrete. See Concrete
Reinforcement (trade publication), 283
Reiver range of commercial vehicles (Albion Motors), 297
Relativity, special, for physicists, by G.

Relativity, special, for physicists, by G. Stephenson and C. W. Kilmister (review),

Relaxation methods for two-dimensional plate problems, by Dr. J. A. N. Lee, 752

"Relaxe" cab for Berliet heavy commercial vehicles, 45

vehicles, 45

Relays (trade publication), 650

— Busbar, for high current d.c. systems (Londex), 809

— Calculator (trade publication), 650

— Photo (trade publication), 802

— Sub-miniature, series 335 (Magnetic Devices), 196

— Wire contact (Woden Transferred)

vices), 196

Wire contact (Woden Transformer Co. and T.S. Precision Engineering), 421
Relief valve. See Valve
Remington Rand, Ltd., electric typewriters at Business Efficiency Exhibition, 698
Remote control. See Control
Renault, Communist activities at, 162; motor

Renault, Communist activities at, 162; motor cars assembly in South Africa, 322; Floride motor car, 708; see also Regie Renault
Rendel, Palmer & Tritton, deep-water berth for supertankers in Persian Gulf, 231
Renold Chains, Ltd., chains (trade publication), 155; Sprag clutches (trade publication), 554

Rensselaer Polytechnic Institute, new curriculum at, 66; investigation into new teaching methods, 67
Rentaset, Ltd., television hire, 320
Repair shop, railway, geodesic dome as, 473
Replica device for strain measurements using grid, by V. M. Hickson, 483
Reports on Progress in Physics (Vol. XXI), by A. C. Stickland (Ed.) (review), 93
Representatives, technical, course for, 126
Research, applied, organisation and administration of, OEEC symposium, 499
— Associations, abbreviation of, 501
Research & Control Instruments, Ltd., Philips type PW7000 gas liquefying machine for cooling systems, 697
— on design, 646
— and development in buildings and structures in iron and steel industry, by Dr. J. S.
Terrington, D. Buchanan, and P. D.

in iron and steel industry, by Dr. J. S. Terrington, D. Buchanan and P. D. Thompson, 221 Research Development Corp., National. See

DSIR five-year plan for expenditure on

— Expenditure, comment on, 726
— Grants for (DSIR), 105
— Industrial (supplement), 520
— Institute of National Defence (Sweden), ring slit sifter for powder particle size analysis, 70
— Lines of communication in, Plain Words on, 386
— in management directions

on, 386

— in management direction (supplement), 516

— Organisations, cooperative, 520

— in overseas dependencies (booklet), 227

— Project (supplement), 520

— Results, availability to small firms, 672

— by Royal Navy, cost of, 530

— Scientific and industrial, in India, by V. S. Swaninathan, 300

— in schools, 142

— See also International Scientific Research Exhibition

Exhibition

Exhibition

in small firms, 520

in Western Europe, 499
Residual stress. See Stress
Resin-based adhesive, Bondarc, for rigid joints in long rails, 32

Epoxide, casting. Epophen Mould Seal for (Leicester, Lovell & Co.), 183

Epoxy for road surfacing 587

Eterester, Lovell & Co.), 183

— Epoxy, for road surfacing, 587

— for runway, 804

— for potting and casting in electrical industry (Bakelite), 309

Resinates (Charles H. Windschuegl, Ltd.), 747

Resinates (Charles H. Windschuegl, Ltd.), 747
Resistance of ships. See Ship resistance
Resnit mouldable reinforced plastics sheet
(Leicester, Lovell), 588
Restrictive Trade Practices Act, effects of, 691
— Practices Act, effect on electrical engineering industry, 572
— Practices Court, ruling on price-fixing agreements of Yarn Spinners Association, 161

Practices international dispussion in

Practices, international, discussion in Parliament on, 272 Practices, National Joint Advisory

Council report on, 235
Retail Management Conference (Harrogate, 1959), preliminary note on, 57
Retailing, next ten years in (conference), 57

Retarder, wagon, at Temple Mills marshalling yard, 738

yard, 738
Retirement, Your (booklet), 299
Reynolds Industrial Inc., aluminium plant in Valencia, 723
Reynolds Metals Co., bid for control of British Aluminium, Ltd., 3, 39. See also Plain Words, 34; control of British Aluminium Co., 71; position and prospects of, 71; machining of aluminium (trade publication), 746; aluminium for office building curtain wall, 804
Reynolds, R. S., Jnr., on Reynolds Metals Co., 71

Reyrolle, A., & Co., Ltd., air-break circuit-breakers up to 500 MVA at 15 kV, 499 RFD Co., Ltd., protective clothing, 491 Rheinhausen. See *Hutten-und-Bergwerke Rheology Abstracts*, note on, 61 Rhodes, B., & Son, Ltd., sight flow indicators, 569

Richards, R. K., digital computer components and circuits (review), 582

Richards, P. K., digital computer components and circuits (review), 682

Richards, P. K., digital computer components and circuits (review), 682

Richardson, Prof. E. G., on musical pitch, 695 Richardson, Prof. E. G., on musical pitch, 695

Richardson, H. M., on boiler refractories, 619 Richardson, Sir O., obituary, 228

Riddle Airlines Inc., Argosy AW650 freighter aircraft for, 369
Ridsdale & Co., Ltd., Dietert universal sand strength testing machine, 722
RIG spark erosion equipment (Burton

strength testing machine, 722
RIG spark erosion equipment (Burton Griffiths), 761
Rigid Frame Formulas, by A. Kleinlogel (book), 154
'Rigid" transportable drilling, boring and milling machine for AEI (Swiss), 562
Rigidex polyethylene for Handycan liquid container (British Resin Products), 600
Riley, V., linear programming (review), 310
Riley 4/68 1½ litre motor car with Farinastyled body, 612
Ring, ball-bearing slewing, Roballo, 340
— Slit sifter for powder particle size analysis, 70
— Wiring system, 724

- Wiring system, 724
Ringelmann Scale for determination of smoke densities, 351
Ritchie, G. P., resignation from board of F. Perkins, Ltd., 328

Ritecure concrete curing material, 426

River flow measuring stations, 291

— Pollution, synthetic detergent trials, 747

— Trent, gas liquor disposal in Stoke area, 672

— Volta, project, road construction for (Parkinson Howard), 804

RJC Motors & Marine Engines, Ltd., glass fibre casings for Bedford industrial units, 505

Dad accidents. See Accidents
Building programme in UK, 148

— Techniques, discussion in Parliament on,
201

Construction capacity, remarks on, by R. M. Douglas, 671

— Capital expenditure estimates on, 418

— Concrete, guide to: questions and answers (review), 61

— Course, 739

— Estimates, 195

— Hardone for, from disused aerodromes

Hardcore for, from disused aerodromes,

543

— in India, programme for, 543

— Programme, 418

— Programme extension, 195

— Programme, progress of, 450

— Research into, by J. M. Fisher, Dr. A. R. Lee and Dr. R. S. Millard, 671

— Schemes, schedule on, 323

— in Scotland, 776

— for Volta River project (Parkinson Howard), 804

— in Western Iran, 775

Howard), 804

— in Western Iran, 775

— Development Plan for India, 130

— Emulsions, modern (book), 376

— Fabian Society pamphlet on, 323

— Factory-built concrete blocks for, 543

— Federation, British. See British

— International. See International

— Great North, construction work progress on, 450

— North, Stamford bypass on, 776

— North, Stamford bypass on, 776

— Heavy-duty, in Africa, 671

— Improvement, Hyde Park, twin-main boring

Road Machines (Drayton), Ltd., hydraulic Mono-Rail transporter, 390

— Making materials, comparison of, 131

— Materials course, 739

Road in the course, 739

Radio services of AA, 297
Railways conversion to, discussion in Parliament on, 143
Research Laboratory, guide to concrete road construction: questions and answers

road construction: questions and answers (review), 61; vehicle headlamp testing (book), 154; Reflex reflectors, by K. N. Chandler and J. A. Reid (book), 253; road accident research, 298; discussion in Parliament on, 428; polishing of roadstone, by D. J. Maclean and F. A. Shergold, 343; road materials and construction courses, 739
Rollers, hydrostatic drive for, 655
Surfaces, effect of materials used, 131

Rollers, hydrostatic drive for, 655
 Surfaces, effect of materials used, 131
 in Scotland, dangerous condition of, 143
 Surfacings, bituminous, skidding of, polishing of roadstone in relation to resistance to, by D. J. Maclean and F. A. Shergold (book), 343
 Epoxy resins for, 587
 Town, for today and tomorrow (exhibition), 190

- Transport Association, Traders'. See Engineers, Institute of. See Institute - Tunnel, Mont Blanc, through Alps, 162, 494

St. Bernard, 162

Road and tyre, friction between, by Dr. D. Tabor. See LETTER, 631

- Urban, traffic congestion in, exhibition on,

— See also By-pass; Highway; Motorway
Roadstone, polishing of, in relation to resistance to skidding of bituminous road surfacings, by D. J. Maclean and F. A. Shergold (book), 343
Roadways, elevated prestressed concrete, design competition for, 190
Roballo Engineering Co., Ltd., ball-bearing slewing rings, 340
Robens, A., on work for elderly persons, 330
Robert, M., on accident prevention progress, 701
Roberts, A., geological structures and maps

erts, A., geological structures and maps (book), 92

Robertson, Sir B., on B.R. electrification progress, 567

Robertson, Sir B., on B.R. electrification progress, 567
Robertson, C., review of modern flats, 778
Robertson electric trawl winch for trawler Falstaff, 375
Robertson, James, & Sons (Fleetwood), Ltd., trawling unit, 781
Robertson, R. E., on control concepts for satellites and space vehicles, 332
Robins, D. A., on atomic bonds in ceramics, 90
Robins, J. A., treatment of water for industrial high-pressure boiler plant, 247
Robinson, D., on house magazines, 364
Robinson, D. M., on High Voltage Engineering Corp. in Europe, 391
Robinson, I. V., obituary, 568
Robinson, I. V., obituary, 568
Robinson, L., & Co. (Gillingham), Ltd., Jubilee Clipdriver screwdriver for hose clips, 697
Robinson, S. T., on operation of a company standards department, 781
Robinson, Thomas, & Son, Ltd., machinery for flour mill of Barnes Milling, Ltd., 156; grain scourer (trade publication), 443
Robot "boiler feed regulator (trade publication), 443
Robotug driverless troller system (EMI), 589
Rock, D., review of Functional tradition in

tion), 443
Robotug driverless troller system (EMI), 589
Rock, D., review of Functional tradition in early industrial buildings, 777-778
Rock drills, lightweight support leg for (Consolidated Pneumatic Tool Co., Ltd.), 230

— Pressure in mines, by E. de St. Q. Isaacson (book), 475
Rocket, atomic propulsion by explosion, 206

(book), 475

Rocket, atomic propulsion by explosion, 206

— Black Knight, 2nd test firing, 362

— Blue Streak, for satellite, discussion in Parliament on, 571

— Engines for control of X-15 upper atmosphere research aircraft (Bell Aircraft Co.), 361

Engine, Jupiter, for Juno II space probe

vehicle, 388

— Liquid-propellent, combustion in, by D.

Carton, 36

— Thrust reaction, XLR11, for X-15 upper

atmosphere research aircraft, 362 Dr. R. H. Goddard's work on, 207 Juno II, for launching of Pioneer IV space probe, 360

Monkeys in, comment on, 727

— in, Plain Words on, 726

Moon, Russian, 36

See also Lunar Nozzles and exhaust jets, by E. T. B. Smith, Propellents, comparison and selection of, by F. Fitzgerald, 279

— Free-radical, 279

Free-radical, 279
Liquid, combustion in, by D. Carton, 36
Ship, X-15, launching preparations, 678
Skylark research, telemetry equipment in, 113

— See also Missile; Satellite; Weapon, guided
Rocketdyne. See North American Aviation

Rockite K501 moulding compound (trade publication), 746
Rockweld Ltd., Vertomatic automatic slag welding machine, 556
Rockwell Machine Tool Co., Ltd., Werner milling mechines with finger tips central

milling machines with finger tip control, 261 Rod, brazing, for Sifbronze process (Suffolk Iron Foundry (1920)), 503

— Wire and strip, Lindsay's international register, 1957-1958 (review), 310

Rodgers, J., aid for depressed area in S. Wales, 328

Roe, A. V., & Co., Ltd., metal honeycomb sandwich radar aerials, 375; electronic computer for motor car suspension design problems, 644

problems, 644
Roethlisberger, Prof. F., on frozen human energy, 796; Ledlie Prize awarded to, 796
Rogers, G. F. C., engineering thermodynamics; work and heat transfer (review), 442 Roko nylon heavy tup belting for drop stamp, 504

— Transmission belting, 504
Roll, rolling-mill. See Rolling-mill roll
Roll-up ladders, Easy-Roll (Bentall-Alley), 628 Roller bearings. See Bearings

— Brackets for advancing girder supports, 623

Roller, plate bending, Besco (F. J. Edwards), 454 4.54

— Road See Road roller

Rollermills for wheat grinding at Barnes
Milling, Ltd. (Thomas Robinson), 156

Rolling mill for medium strip at Brinsworth
Mill (Loewy), 22

Polly grinding mechine heavy-duty

- Roll grinding machine, heavy-duty (Churchill), 127
- Stewarts and Lloyds, progress of, 167
- See also under specific types of rolling

mill

— Plate, "crowning" defect, 754

— Stock, railway. See Railway. See also Carriages; Locomotives; Railcars; Wagons

— Wheel rim, on Henry Berry horizontal press (David Brown), 785

Rolls-Royce and Associates, formation and constitution for nuclear activities, 240; purchase of propulsion unit from US for

purchase of propulsion unit from US for submarine *Dreadnought*, 546

Rolls-Revee Ltd., endowment of Hives Chair of thermodynamics, Nottingham University, 48; C8SFL diesel-hydraulic engine

for Twin Disc torque converter locomotive, 51; Tyne turboprop engine for Vanguard airliner, 14. See Correction, 75; Dart turboprop aircraft engine overhaul facilities of BEA, 223; Newsletters of, 343; Air Registration Board's approval for Air Registration Board's approval for Conway by-pass turbojet aircraft engine, 381; patent agreement for sound suppressing nozzles for jet aircraft; 456, maintenance training centre, 527; manufacture of atomic fuel elements, 575; atomic submarine land-based project at Dounreay, 675; NEPTUNE atomic reactor, 675; operation and maintenance of diesel locomotives, 689; development and production of oil engines (Sentinel Works), 810; operator control, 811; see also Vickers Nuclear Engineering Ltd.

Rontgen rays. See X-ray
Roof, concrete, for Manchester bus station, 94—Construction, Tecon timber products for, 543—Drainage (BRS Digest), 64
— Gutters, Welvic pvc (ICI), 416
— Hyperbolic, for Commonwealth Institute, 804
— Melting shop, design of, 221

Melting shop, design of, 221
Sheets, asbestos cement, Magnum (Universal Asbestos Manufacturing Co.), 683
Shell concrete, for exhibition hall of Centre National des Industries et Techniques, 738

Structures, timber, research development and design of, by E. Levin and P. O. Reece (report), 579

Support, hydraulic, Roofmaster, at Cleveland coal show (Dowty), 660
Timber conoid, for Oxford Road railway

station, Manchester, 408 - Construction, international working party on, 495

Wind loading effects on, 707 Roofing tiles, concrete, increased use of, 192 Roofmaster hydraulic roof support at Cleve-

land coal show (Dowty), 660

— Supports for goaf debris at coalfaces, 717
Rooke, G. W., London heliport, 543

Room, clean, Bassaire, for ultra-clean produc-tion, 415
Rootes Motors Ltd., Cargo Lift vans and

trucks with elevating bodies, 781
Rope, polyethylene yarn, 748
— Tension gauge, Schmidt (Addison Electric),

Roper, F. D., cores and core-making (book),

Rosan permanently locked studs and inserts (Instrument Screw Co., Ltd.), 557
Rose Construction Co., Ltd., new printing

factory of Perivan Group, 690
Rose, Downs & Thompson, Ltd., oil expeller (trade publication), 443

(trade publication), 443
Rose, William, Ltd., flexible hoses in ptfe, 780
Rosen, A., review of Interference Between
Power Systems and Telecommunication
Lines, 745-746
Rotameter Manufacturing Co., Ltd., photoelectric alarm for flow meters, 633
Rotating amplifiers, by G. Loocke (review), 475
Rotator, welding (Yates Plant Ltd.), 294
Roto-Finish Ltd., Niplex nickel stripping bath,
284

Roto-Finish Record, 649
Rotodyne vertical take-off airliner, world class speed record for, 103
Rotol, purchase by Dowty, 199

Rotol, purchase by Dowty, 199
Rotomotors, Holman, remote control equipment for (Maxam Power, Ltd.), 420
Rotor angle limiter, type KAL, 254
— for Kolibrie helicopter, 88
— Whirl, with gas film bearing on, 178
Rotork Engineering Co., Ltd., remote control valves (trade publication), 554
Rototherm high-temperature thermometer for diesel engines (British Rototherm Co.),486
Rotterdam, port of, Europoort Plan for, 62

Rotterdam, port of, Europoort Plan for, 62
— of, Muller-Hanna cre-handling installation at, by F. D. Vines, 593

Roughness tester, surface (British Physical Laboratories), 69 Routing, copying and profiling machine (Rank

Precision Industries), 455
Rowe, R. E., design of right concrete slab bridges for abnormal loading (book), 253
Royal Academy of Arts, Plain Words on summer exhibition of, 598

Aeronautical Society, 2nd Lanchester Memorial Lecture on aeroelasticity, by Prof. A. R. Collar, 17; air traffic control problem, by E. W. Pike, 67; aircraft industry and airborne weapons, by D. W. Douglas, 572; lecture theatre, 671

Air Force, civil engineering and building work for, 392

— Force Institute of Aviation Medicine, escape from submerged aircraft, 278

Albert Bridge, Saltash, centenary of, 538-540
Automobile Club, mobile office at Ideal
Home Exhibition, 393; spring cleaning
guide, 393; Guide and Handbook, 496;
Commonwealth Motoring Conference, 544

Commonwealth Motoring Conference, 544

Botanic Garden, Edinburgh, mineral insulated cable for (BICC), 508

Institution, control of evolution in man, by Prof. C. D. Darlington, 11; library, note on, 29; scientific books of the 18th century and emergence of modern science, by H. D. Anthony, 713

Naval College, Greenwich, chair of nuclear science and technology at, 206

Scientific Service, research by, 530

 Scientific Service, research by, 530
 Navy, research, 530; atomic propulsion programme, 675 Royal Netherlands Blast Furnaces and Steel-

works (limuiden), unloading of iron ore ships, 593 al Netherlands Harbour Works Ltd., tender for Malta deep-water harbour, 363
Royal Observatory, Herstmonceux Castle,
parallax work with Isaac Newton telescope,
341

Society, 1st report of committee on scientific research in schools, 142; report on UK observations of artificial satellites, 440; content lists of *Proceedings* and *Philosophical Transactions*, 501; British National Committee on Space Research, 661

Royal Society of Arts, Benjamin Franklin medal awarded to H. G. Nelson, 142; consulting engineer and his contribution to the national economy, 489; large scale organisation and change: oil marketing, by C. T. Brunner, 562; trade and the bamboo curtain, by Earl of Verulam, 788—Victoria Dock, extensions to, 94
Royce Electric Furnaces Ltd., continuous flash annealing furnace at Aluminium Corp., 633

Corp., 633
Royston Instruments, price reduction for Midas recording appratus, 692
Rubber, cable, shore hardness, elastomer E372 (ICI), 309

(ICI), 309
- Chlorinated (trade publication), 650
- Conduit strip for cable (Vulcascot), 633
- Industry, Institution of the. See *Institution*- Products, specifications for: call for rationalisation, by H. F. L. Jenkins and F. Bastow, 476
- Tests on, 476
- Sandwich fender, Raykin Fender (Andre)

- Sandwich fender, Raykin Fender (Andre),

Silicone, models for crankcase deflection measurement, 304
 Springs for air compressor foundations, 214

Swelling tests on, 476

Swelling tests on, 476
 Synthetic, production at Fawley (International Synthetic Rubber Co.), 25
 Technology section for Institution of the Rubber Industry (South Africa), 228
 Terylene conveyor belting for Russian ore field (BTR Industries), 284
 Rubber and Thermoplastic Cable Manufacturers' Association, termination of price fixing 691

fixing, 691

Tyres, electronic machinery used in production of, 352

Rubert & Co., Ltd., Junghans high-precision dial gauges, 358

Rubery, Owen & Co., Ltd., Hallsworth moulding system, 722

Rufford Colliery, skip winding plant at, 338

Ruhr iron industry, history of foundation of, 264

Rules for construction testing of scantlings of metal-arc welded steel boilers and other pressure vessels (book), 746 Rumania, economic position, 727 Runcorn Viaduct, strengthening of, 671

Runcorn-Widnes Bridge, new north approach to, 543 Running sheds, railway, inclusion in Factories

Acts, 535
Runway, San Francisco airport, Epon asphalt concrete runway, 804
Russel, Newbery & Co., Ltd., single-cylinder engine for induction ramming tests, 370
Russell Constructions Ltd., bulk materials

elevator, 601
Russell, R. S. (Ed.), Commonwealth and Empire Year Book (book), 92
Russia, Acacemy of Sciences, international congress on automatic controls, 553

Atomic reactor accident, 395

— Reactors, fast, 335

Blast furnace practice, 797

Board of Trade delegation to, 571

British trade mission to, 659

Purpositor and Wain discal angiet

Burmeister and Wain diesel engine licence agreement with, 264
Cine films for scientific purposes, 763
Continuous casting of ingots, 797

Cultural relations with, discussion in Parlia-

ment on, 363
Dow-Mac Process precast concrete plant for, 435 Economy of, Mr. Khrushchev's review of,

Electric technology (Vol. 1) (book), 92

Exchange programme with 363, 763 Export publications, 369 Further education for workers, 235 Industrial output plans, 194 Iron ore deposits, 797

Iron and steel industry: destruction, re-covery and achievements of, 797

Mobile gas-turbine power station (Ruston & Hornsby Ltd.), 805
Moon rocket attempt, 323
Motor industry, by G. Wilkins, 740
Nuclear fusion research, 702
Oil pipeline for statellite countries, 758
Orders for Pariticly mobiles tools, 228

Orders for British machine tools, 328 Order for chemical plant (Vickers), 328 Patents and prediction in, 678

Population statistics, 693
Rocket flight and lunar conditions studies, 332

Scientific and engineering manpower statistics, 701

Space projects, summary of, 615

Student statistics, 701 Technical and vocational education in, by M. I. Movsovic, 733
Telephone calls to, reversed charges for, 364
Terylene-rubber conveyor belting for ore

field (BTR Industries), 284 - with, discussion in Parliament on, 363, 493, 571 - Trade with, 636

- with, factors affecting, by S. R. Anfimov, 755

with, recent contracts, 757
Agreement with, 755
Expansion with, 435

Mission to, discussion in Parliament on, Russian catalogue of scientific books, Collet's,

 Chromium ore purchases by US, 387
 Journal, Avtomaticheskaya Svarka (Automatic Welding), translation by BWRA, 160 - Scientific literature, translations of, note on,

Rusting. See also Corrosion
Ruston-Bucyrus Ltd., activities in Commonwealth as associate of Ruston & Hornsby

Ruston-Grayloc high pressure connections, 636
Ruston & Hornsby Ltd., Egyptian Government's order for diesel engines and pumps, 57; position and prospects in Commonwealth, 89; AT series of marine

and industrial diesel engines, 261; AT range of diesel engines designed from first principles, 304; gas-turbine order from Canadian Industries Ltd., 312; licence agreement with Gray Tool Co., for high pressure and temperature connections, 636; mobile gas-turbing power exterior.

mobile gas-turbine power station for Russia, 805
Rustyfa Ltd., member-firms of, 273; new orders for, 312; tyre factory order for Russia, 757
Rutherford High Energy Laboratory, magnet

sectors for proton synchrotron, 753; Nimrod proton synchrotron, 772 Ryan, M., architect for Heinz factory at Kitt

Green, 576
Ryder, G. H., on mechanics applied to engineering (book), 123

RZR laboratory stirrer (Jones and Stevens), 454

S

SAFE-D-SPEEDER reduction gear for electric hand drills (John M. Perkins and Smith),

Safety (trade publications), 216, 283

— Atomic merchant ship Savannah, 548

— Power stations, Plain Words on, 790

— Propelled ships, 675

— Reactor, consolidated report on, by

F. R. Farmer, 237

Reactor containment, 238 Reactor, control and, 687 liquid-metal fuelled fast

Reactors,
breeder, 317 Reactors for ship propulsion, 674, 793
 Reactor. See also Safety precautions
 Belts and harnesses for motor vehicles, 297,

in building operations, chemical engineer looks at, by B. Halfpenny, 397

in Canadian atomic energy operations, 236 in chemical factory, 397
Council, British. See British
Crane, in iron and steel industry (report)
235

Devices for atomic reactors, 238

- Equipment for air compressors, 192
- of equipment, examination and seal of approval by British Safety Council, 595
Safety Guide (booklet), Federation of Civil Engineering Contractors, 408 Integra warning device for locomotives, 52

Measures in natural gas tanker Methane Pioneer, 233 Precautions in atomic energy UKAEA, 397 in atomic reactor for ship propulsion (Mitchel-Fairfield-Combustion Engineer-

in beryllium handling, 412 for Japanese atomic power station, boron-steel balls for, 463

in radiation, standards for (Euratom), 302 —— for turbocompressor plant, 51
Safety, publication of British Iron and Steel
Federation, 235

- Seal of (British Safety Council), 595 Safetymaster motorised hand drill (Wolf), 288 Safetymaster motorised hand drill (Wolf), 288
"Safrax" water-lubricated pump (Saunders Valve Co., Ltd.), 352
Sahara, oil explorations, 431
Sahmel, P., welded construction for techlogists (review), 501
Sail, satellite, for Venus space project, 441
Sailing dinghy. See Dingby
— See also Boats; Yachts
Sain, K., integrated water utilisation (book), 93
Sainsbury, J., Ltd., EMIDEC 1100 computer for, 695
Saint. See St.
Salary, Civil Service, Coleraine Committee on, comments on, 364
— Service, increases in, 235
— See also Income; Pay: Wages

— See also Income: Pay: Wages
Sales effort, planning the, by P. Randolph, 511
— Engineers, course for Newman Industries,
724

Force, control methods for, by W. R. Bruce, 512

- - Training of, by H. C. White, 511
- Management course, preliminary notice, 812
- Managers' Association, Incorporated. See Incorporated Organisation, whole company as, by

K. W. J. Jones, 511
Promotion for Mackay DAC130 compres-Publicity for shipbuilding industry, poster for, 627

Reorganisation of London area of GEC, 788 Technique of Master Vending Machine Co.,

Ltd., 564 See also Selling Salesmen, training of, by H. C. White, 511

Salokangas, J., on fatigue failures of connecting rods of frame saws under corrosion (book),

Salzer, H. E., on interpolation over cartesian grid (book), 586 Samarium 153 as low-energy photon source,

SAMES. See Societe Anonyme de Machines Electrostatiques

Samet, P. A., review of Mechanical Resolution of Linguistic Problems, 184 Samica paper mica insulation (trade publication), 746
 Samples Fair, International, 563
 Preparation for microscopic investigation, by E. Poulsen (book), 253
 Volume dry calculation in flue gas

Volume, dry, calculation in flue-gas sampling, 287

Sampler, electrostatic, for polluted gas, 351
Sampling, gravimetric, of dust and grit in flue gases, by R. A. Granville and W. G.

Jaffrey, 285
New York of the graving state of Nozzles and probes for flue gas sampling, 286

Pump for gravimetric flue-gas sampling apparatus, 287 — Rate, calculation in flue-gas sampling, 287 Sampson, H., world railways, 1958-59 (review), 474 Samson Controls Ltd., bellows joints (trade publication), 554

Samuels, H., industrial law (review), 376

Samuels, H., industrial law (review), 376
San Francisco airport, Epon asphalt concrete runway, 804
Sand strength testing machine, Dietert (Ridsdale & Co., Ltd.), 722
Sander, wide belt, Sherrill Speed Feed (Wadkin), 634
Sanders, L., Mancur spring balance, 419. See Letter, 531
Sanderson and Porter, high-temperature gas-

Sanderson and Porter, high-temperature gas-cycle graphite moderated pebble-bed reactor (PBR) under study, 734 Sandslinger, Servo-slinger (Foundry Plant & Machinery Ltd.), 722

Sandstone cylinders and prisms, failure in com-

pression, 799
Sandvik steel belt conveyor for mineral wool blankets (Mineral Wool Insulation Co.),

Sandwich course. See Course
Sankey, Joseph, & Co., Ltd., Vendo milk
vending machine, 266, 325; magnet
sectors for proton synchrotron, 753; DRNS insulation coating, 755
Saro-Nuclear Enterprises Ltd., formation of, 176

Saskatchewan, South, river dam, 739 Satellite, Beacon, summary of details of, 616

— Blue Streak rocket for, discussion in Parlia-

ment on, 571 British programme, discussion in Parliament on, 330

— for cloud study, 259
— Discoverer I, summary of details of, 616
— Discoverer II, summary of details of, 616

Discoverer II, summary of details of, 616
 Explorer I, summary of details of, 615
 Explorer II, summary of details of, 615
 Explorer III, summary of details of, 615
 Explorer IV, summary of details of, 615
 Explorer V, summary of details of, 615
 Lunar journeys of, calculations for, 332
 Observation of, Royal Society report on, 440
 Project Score, summary of details of, 616
 Sail for Venus space project 441

Sail for Venus space project, 441
Sputnik I, summary of details of, 616
Sputnik II, summary of details of, 616
Sputnik III, summary of details of, 616
Sputnik III, value of, 333
Summary of, 615
Venguard, summary of details of, 615

Vanguard, summary of details of, 615 Vanguard I, summary of details of, 615 Vanguard II, summary of details of, 616

See also Lunar; Moon; Space Saturn Industrial Gases Ltd., Alyn tube profile cutter, 534 Saunders, C., on West Europe, 387

Saunders, Prof. O. A., on regenerator efficiency,

Saunders-Roe (Anglesey) Ltd., Manchester bus station, 94; work on CIBA (ARL) Ltd. new building, 707 Saunders-Roe Ltd., formation of Saro-Nuclear Enterprises Ltd., 176; Hovercraft proto-types, 637; experimental work on new ship designs, 766; principle of Hovercraft, 767

Saunders Valve Co., Ltd., Safrax water-lubricated pump, 352; diaphragm valves for atomic energy industry, 490 Savage Memorial Prize award, 299 Savage and Parsons, 1959 memorial prize

awards, 299 Savannah atomic merchant ship, details of, 548; launching of, 674; proposed schedule of operation, 674; model of reactor plant, 674; radiation level permitted in, 675; stabilisers for, 795

Savannah River heavy-water production plant, 204

Saw frame connection and fell.

Saw, frame, connecting rod failure under corrosion, by J. Salokangas (book), 586

— Jig, Black & Decker U. 10, 224

— Pacera (W. J. Meddings), 729

Sawko, F., on structural frame analysis by electronic computer, 18
SC-5 aircraft. See *Britannic*Scaffolding, Self-Lock (trade publication), 185
— Suspended (Wates Ltd.), 439
— (Wates Ltd.), 439
— (Scales plastics architects' British Standard

Scales, plastics, architects', British Standard, 340

Scaler type 1700 counting equipment, 102
Scaling unit, low-power (Avo Ltd.), 318
Scammell, G., & Nephew Ltd., aluminium alloy grain carriers, 749
Scan Group, Scandinavian co-operative trading organisation, 756
Scandinavia, trade with, 756 Scandinavia, trade with, 756

Scandinavian co-operating trading mission to Council for Applied Research, Acta Polytechnica Scandinavica, 713

Scanner in Consort radar equipment (Marconi), for nuclear research emulsions, automatic (Barr & Stroud) 102,

Slotted waveguide, for Kelvin Hughes unit system for marine radar, 262
 Scantlings of metal-arc welded steel boilers

and other pressure vessels, rules for construction testing of (book), 746

Scavenging in diesel engine of 15,400 b.h.p. (Stephen-Sulzer), 688

Sceptre III thermonuclear fusion apparatus,

experimental results of, 575 Sceptre IIIA, coils for, 608

— Structural details of, 608 Schildkraut, S., basic electricity (book), 746

Schildkraut, S., basic electricity (book), 746
Schlag, A., general hydraulics (book), 802
Schlichting, H., aircraft aerodynamics. Vol. I,
Part I (book), 802
Schlieren cinema film award, 598
Schmidt, E., technical thermodynamics (review), 60; on engineering units, 695
Schmidt rope tension gauge (Addison Electric),
455
Scholars overseas ERI schema of 537

Scholars, overseas, FBI scheme of, 537 Scholarship in highway engineering at Birming-ham University, 105

in machine tool design, 97 Truscon Travelling awards, 804 University, Birfield Industries, 701 Westinghouse Electric Corp., 397

Schonland, Dr. B. F. J., on present state of thermonuclear research, 598

School-leavers, absorption of, 733

— Bulge of, comment on, 481

— Bulge of, discussion in Parliament on, 493

— Course, Metropolitan-Vickers, 573

— Employment of, 693

— Employment of, 693

— See also Bulge
School, night, in Russia, 235

— Scientific research in, 142
Schoolboys, course for, Wates Ltd., 537
Schrader's, A., Son, midget air cylinder, 534;
quick action hose coupler, 632

Schultheiss, P. M., design of servomechanisms (review), 713 Schuster, Sir G., on hospital administration,

Science, centenaries in 1959, 10

— Foundation, National. See National

— Graduates, invitation to (Scientific Civil Service career booklet), 235 - of high explosives, by M. A. Cook (review),

Indian Institute of. See Indian Science Information News, 617

Science journals, British, foreign distribution of, 330

Modern, emergence, and scientific books of the 18th century, by D. H. Anthony, 713
Museum, Canberra aircraft for, 536
— Handbook of cycles collection. Part II, by C. F. Caunter (book), 29; time measurement. Part 1, historical review, by F. A. B. Ward (book), 29
Science News 50 ed by A and N. Clow

Science News 50, ed. by A. and N. Clow (book), 586

Studentships, NATO, discussion in Parliament on, 330

and Technology, National Lending Library

for. See National Lending Library
Scientific attache, Moscow, D. A. Senior appointed, 489, 493

— Books, Collet's Russian catalogue of, 1959,

- Of the 18th century and emergence of modern science, by H. D. Anthony, 713
- Civil Service. See Civil Service
- Information, Institute of. See Institute
- Instrument Manufacturers Association, British instruments directory and buyers' guide (review), 649
- Research Association British See Research Association, British. See

British - Literature, Russian, translations of, note on,

Manpower in Russia, 701
Research. See Research

— and Technical Information of China, Institute of. See Institute

Scientist and engineer, Plain Words on, 418

— Fall in demand for, 449

- and technologists, future requirements for,

Young, note on publication, 29
 Scintillation counter as neutron detector, AWRE, 771

Scotland, diesel passenger trains, 201 Electricity plans for the future (publication),

- Government assistance for new factories in, 363 Newfoundland cable, 418

North of, Hydro-Electric Board. See North of Scotland Road construction in, 776

 Road surfaces in, dangerous condition of, 143 - South of, Hydro-Electric Board. See South

of Scotland Unemployment in engineering industry, 493 - Vocational further education council, 672
Scott Electric Vehicles Ltd., driverless trucks for BR Newton Abbot goods shed, 589
Scott, J. S., dictionary of civil engineering (review), 310

t, James & Co. (Electrical Engineers), Ltd., spectrum analyser for audio and

supersonic frequencies, 808

Scottish Electricity: Plans for the Future (publication), 34
Scottish exhibits at Lisbon Trade Fair, 535
— Gas Board, Bischoff tower purifiers for desulphurisation in Lurgi gasification, 588
Scottish Ore Carriers Ltd., Morar bulk ore carrier for, 349 Technical Education Consultative Council,

Scourer, grain (trade publication), 474 Scrap yard at Spartan Steel & Alloys Ltd., 58 Screw-cutting machine. See Boring machine,

universal horizontal Propeller. See Propeller See also Thread

Screwdriver, Jubilee Clipdriver, for hose clips (L. Robinson & Co.), 697

— Pneumatic, quiet (Atlas Copco), 485
Screwing and threading machine, Maiden 2C/ST (Landis Machine-Maiden), 633

Scrubbers, gas (trade publication), 474 Scuffing, Sulfinuz process for resistance to, 116 Sculpture, monolithic, of Taylor Woodrow sign, 126

Scylla magnetic mirror device, 702 Sea bed, metals from 567

Pollution, Fomescol emulsion breaking agent for reducing (Glovers (Chemicals) Ltd.),

- Voice across the, by A. C. Clarke (review),

283

Water. See Water, sea
Seacat missile, Admiralty orders for (Short Bros. & Harland), 226
Seal, ball bearing (Burtonwood Engineering Co., Ltd.), 294

Mechanical (trade publication), 554

Mould, Epophen, for casting epoxide resins (Leicester, Lovell & Co.), 183

Nylon, for buffers, Maranyl, 432

of safety (British Safety Council), 595
Sealing paste (trade publication), 283

Sealing paste (trade publication), 283

Seaslug guided weapon, telemetry equipment in, 113 Seat belts and harnesses for motor vehicles renort), 297

Seat ejection, for escape from submerged aircraft, 278
Seaway, St. Lawrence. See St. Lawrence

Seaway

Seawings hydrofoils for outboard motor boats (Avica), 87
Sebold, R. C., on supersonic airliner, 215
Secretaria de Comunicaciones y Obras Publicas,
Amsler 300 tons universal static and fatigue testing machine for laboratories of,

Seddon Diesel Vehicles, competition from mass producers for, 103
Seddon, R. H., on heavy motor vehicle industry, 103
"See How They Go," chart on road schemes in Scotland, 776
Seismograph, earthquake classical, behaviour

Seismograph, earthquake, classical, behaviour of, 346

Seismology. See Earthquake Selecta motorised drill kit, 288

Self-Service Co., Ltd., vending machines, 266 Sell, G., petroleum industry handbook (book), 217

Selling, course on, Birmingham College of Technology, 126 Goods overseas, avoiding trouble in, by R. Joscelene, 457

See also Sales Selsyns, performance and operation (trade publication), 586
Semiconductor application reports (Texas Instruments), 475

— Convection of, IEE, 741

Development progress of, 741 Diodes, types and applications, 742 Engineering, future trends, 743

— Germanium as material for, 741
— Manufacture, 743
— Photocells, 743
— Price reduction

Price reduction in, 126 Progress in. Vol. III, by A. F. Gibson, P. Aigrain and R. E. Burgess (review), 801

Rectifiers, types and applications, 742
Refrigerators, 743
Tetrode, four-terminal (Bell Telephone) Laboratories), 680

 Theory and practice, introduction to, by
 A. A. Shepherd (review), 801 Thermocompression bonding of metallic leads to (Bell Telephone), 55 Semolina purifiers for flour mill of Barnes Milling Ltd. (Thomas Robinson), 156

Milling Ltd. (Thomas Robinson), 156
Senior, D. A., appointed scientific attaché to
Moscow, 489, 493
Senior Economisers, annual report, 668
Separators (trade publication), 283
— Water, evaluation by Shell Research, 647
Sergent, R., on work of OEEC, 597
Service failures of structural components, by
1. J. Somervaille, 806
Servis washing machines, service arrangements

Servis washing machines, service arrangements for, 527

Servo components, Feedback (trade publication), 650 Consultants Ltd., transfer function

analyser for testing servomechanisms and control gear, 665

Servo mechanisms in co-ordinate setting system (BTH), 562

— Design, introduction to, by J. L. Bower and P. M. Schultheiss (review), 713

— Transfer function analyser for testing (Servo Consultants), 665

(Servo Consultants), 665 Servo-slinger sandslinger (Foundry Plant & Machinery Ltd.), 722

Servo unit, gearbox, air pressure (Clayton Dewandre), 464

Servomex Controls Ltd., "just price" costing formula, 3. See also Vol. 186; apparatus formula, 3. See also Vol. 186; apparatus for measurement of transmission and phase shift, 70; training and advancement at, by R. Steel, 170; feedback servo components (trade publication), 650
Sestrière Rally, results of, 368
Seven Islands (Quebec), ore handling at, by D. H. Sharp, 593
Severn Estuary atomic power station site investigations, 426
Severns, W. H., on air conditioning and refrigeration (book), 154
Sewell, R., review of Hochwertiges Gusseisen (Grauguss), 216
Sewerage services, grants for unemployment

Sewerage services, grants for unemployment areas, 386

Sewing machine imports from Ireland, 731 Sextants, lunar and stellar, 744 — Radio, solar, 744 Sextet auto-manual pulley for control of

Sextet auto-manual pulley for control of Thermotex glueing machine (Industrial Drives Ltd.), 685

Shacklock, B. W., specific surface of concrete aggregates and its relation to workability of concrete (book), 253

Shaft coupling. See Coupling

— Crank. See Crankshaft

— Dynamometer. See Dynamometer

— Stability in gas film bearings by V. H.

Stability in gas film bearings, by V. H. Brix, 178

Torsion, in turbine reduction gear unit, static torsional test on, 306 Whirl, amplitude calculation, 181 with gas film bearings on, 178 Measurement of, 178

with oil-film bearings, 180 Shakeout machines for solidified castings (Sterling Foundry Specialities), 722
Shaker hearth furnace (Hedin, Ltd.), 293
Shalders, E. G., on mathematics for National Certificate students (book), 343
Shamrock plastics bedied practitive scorts on

Shamrock plastics bodied prototype sports car,

Shand, E. B., glass engineering handbook (review), 29

Shank material, tungsten based, Mallory No-Chat (Johnson Matthey), 620 Shaper, hand, file or plane (Stanley), 64 Share purchasing scheme for staff of Richard Costain, Ltd., 142
Sharp, D. H., on ore handling at Seven Islands, 593

Sharp's Commercials, Ltd., Mark F Bond Minicar threewheeler, 45 Shatt al Arab, oil terminal at, 495 Shaw, John, & Sons, 5,500 ton press for Hawker Aircraft factory at Squires Gate, 214

Shear, alligator, Eldair, for mild steel (George Cohen, Sons & Co.), 696 Shearing machine, bar, Beton (Thos. W. Ward),

— Colt (Thos. W. Ward), 293
— of steel strip at Brinsworth Mill, 23
Sheby, S. A., solvents, resinates and plasticisers,
747

Shed, drying, prefabricated timber, 739

Transit, for Royal Victoria Dock, 94
Sheet, asbestos, cement, Turnall plastics washer and protective cap for, 495

Metal work, Part II: calculations and science, by R. G. Blackburn and J. Cassidy (book), 475

Polyminal phlorida, for clean room floors

- Polyvinyl chloride, for clean-room floors,

415
Reinforced plastics, mouldable, Resnit (Leicester, Lovell), 588
Roof, asbestos cement, Magnum (Universal Asbestos Manufacturing Co., Ltd.), 683
Sheinberg, Dr. S. A., ton hydrodynamic gas bearings, 677
Sheldon, R. C., steam turbine performance and economics (review), 745
Shell, anticlastic, Candela's, 643. See Correction, 671

tion, 671
— Concrete, lectures by F. Candela on, 495
— Architectural, Candela's, 643. See Correc-

tion, 671
Shell-BP Petroleum Development Co. of Nigeria, Ltd., Albion-Cuthbertson Water

Buffalo tractor transporter for swamp lands, 358 Shell Chemical Co., Epikote epoxy resin for road surfacing, 587; Epon epoxy resin for road surfacing, 587

Shell Chemical Works, underground pipeline from Stanlow refinery, 611

Shell Co. of Qatar, Ltd., offshore oil explora-tion in Persian Gulf, 431

Shell Condor SA, oil exploration in Magdalena valley, 430

Shell Film Unit, award for Schlieren film, 598 Shell Group, helical or conical tank heating coil, 250

Shell-Mex and B.P. Ltd., film library catalogue, 1958-9, 93; urban roads exhibition, 190; oil marketing, by C. T. Brunner, 562; underground pipeline at Stanlow refinery,

Moulding, bibliography, 343
Shell Oil Co., Epon asphalt concrete for runway, 804
Shell Oil Co. of Canada, oil exploration in Yukon, 430

Shell Research, Ltd., research on fuelling of jet airliners at Thornton Research Centre, 647; lubricants under radiation, by Dr. C. G. Williams, 715

Shell Transport & Trading Co., Ltd., trading profits, 796
Shelter, bus, Manchester, with light-alloy structure, 94
Shepherd, A. A., theory and practice of semi-conductors (review), 801
Shepherd, R. A., on suggestion schemes, 67,68:

conductors (review), 801

Shepherd, R. A., on suggestion schemes, 67-68;
131; 291-292. See LETTERS, 99, 164

Sheppey. See Isle of

Shercliff, J. A., review of Fundamentals of gas
dynamics, Vol. III, 713

Shergold, F. A., on polishing of roadstone in
relation to resistance to skidding of
bituminous road surfacings (book), 343

bituminous road surfacings (book), 343 Sherrill Speed Feed wide belt sanders (Wadkin)

Sherwood, E. M. (Ed.), technology of columbium (book), 123

Shielding for atomic merchant ship Savannah,

Power plant, for marine propulsion, by H. E. Vann, M. L. Weiss and B. Wolfe, 545

Power station, Hunterston, 426

Reactor, attenuation formula, 545

— Reactor, for marine propulsion, 545

— Reactor, materials for, 545

— Reactor, thickness of, 238

— Manufacturing rights in UK, Knapp Mills Inc., 303

Shift resistors the transfer for a dyeans (Pall)

ift register, twistor, five-advance (Bell Laboratories), 53
Work, biological basis of, 365
Workers, health of, 365

Ships, atomic propulsion of. See Atomic propulsion Cable, for GPO, 418

able repair, tender invitation for new, 720 Canal. See Canal; Inland waterways
Cargo, labour in loading and discharging,

Submarine, advantages over surface Submarine atomic-powered, Moby Dick,

- Submarine, atomic-powered, by J. A. Teasdale, 676

— Submarine. See also *Tanker*— Construction, future trends in, 767
— Steel for, reduction in number of grades

OI, 339

— Container, by D. A. Argyriadis, 451

— Design and construction of new, 530

— Position and prospects of, 766

— Rules, regulations, traditions and superstitions, 767

Iron orange unlocations by De IV. P. L. Control and State of the Positions of the P

— Iron-ore, unloading, by Dr. H. R. Mills, 593

— Jane's Fighting, 1958-59, by R. V. B.

Blackman (review), 474

— Launching. See Launching

— Losses, further study of, by C. V. Manley, 386 - Merchant, age of, 42

- Atomic propulsion of. See Atomic propulsion - Model experiments. See Model; Ship

Motor. See Motorships
 New horizons for, by W. A. Crago, 766
 Ore-carrying, position and development prospects, 593

— — Carrying, special purpose, 593
— Plates, flame-cutting machine with computer control for, 485 — in port. economics of, by R. M. Thwaites, 34

Ship propulsion. See Atomic propulsion:

Marine propulsion; Turbines; Propellers

Resistance, effect of hull form on, 766

Rocket, X-15, launching preparations, 678

Small, hydraulic steering gear for (Keelavite Hydraulics, Ltd.), 487

Steel, classification and construction, rules and regulations for, 310

Water mains, positive displacement number

Water mains, positive displacement pump for (Goodyear Pumps), 486

 Whaling factory, atomic propulsion of, 548
 See also under specific types of ship
 Shipbuilders and Engineers, North East Coast
 Institution of. See North East Coast Shipbuilding, British, compendium, 1959 (review), 310

(review), 310

Industry in Australia, 208

— Clyde, position and prospects of, 572

— in Japan, 41-43

— Position and prospects of, 41

— Poster for sales publicity, 627

— Tyne, position and prospects of, 572

Line production, at Götaverken new yard,
Arendal, Sweden, 561
Merchant, construction trends, 42 Orders, decline in, 171, 699
Position and prospects of, 41-43

- Research Association, British. See British
Shipbuilding
- Welding in, 561
- Yard. See Shipyard
Shipowners' problems, by R. Munton, 530

Shippowners problems, by R. Munton, 530
Shipping, air transport competition, 766
— Flag of convenience, 766
— Discrimination of, 766
— Foreign, discriminatory action alleged 763
— Industry, research need in, 766
— Operational techniques, 767
Shipping World year book and who's who, by
A. Hurd (book), 29
Shippingport pressurised-water reactor, fuel elements for, 140
Shipyard for line production, Götaverken, at

Shipyard for line production, Götaverken, at Arendal, Sweden, 561

Arendal, Sweden, 561
Shirley loom for continuous filament yarns, 77
Shklovsky, Dr. L., life on Mars theory, 637
Shock absorber, Wipac Filter-Link, 45
— Effects on lamp, 85
— Tests. See Impact
— Yawed conical, exact flow behind, by G.
Radhakrishnan (book), 311
Shop, George, Inc., boiling-water reactor for propulsion plant 548
— Stewards, conference with foremen, Industrial Welfare Society, 105
— Writ claiming damages against, 105
Short Bros. & Harland, Ltd., Admiralty orders

Short Bros. & Harland, Ltd., Admiralty orders for Seacat missile, 226; SC-5 Britannic strategic freighter aircraft, 226; Britannic freighter aircraft, 274; freight lift for aircraft, 809

freighter aircraft, 274; freight lift for aircraft, 809

Shorter, D. E. L., review of high quality sound reproduction, 282

Shot-blasting cabinet, Sitdown (Guyson Industrial Equipment), 487

— Equipment at Foundry Exhibition, 722

— Machine, automatic, for heavy steelwork (Cleveland Bridge & Engineering), 439

— Fixing Tool, cartridge-operated (F. H. Bourner & Co.), 327

— Noise, autocorrelation function and power spectrum of nonstationary, by L. P. Hyvārinen (book), 586

— Peening, controlled, by Dr. M. M. Barash and Dr. P. L. B. Oxley, 222

Shovel loader, Frontloader 59 (Merton Engineering), 632

— Mechanical, hydrostatic drive for, 655

Show. See Exhibition

Showers, hot/cold water-mixing valve for (Meynell & Sons, Ltd.), 453

SIAM Di Tella, manufacturing agreement with British Motor Corp., Ltd., 723

Siberian forest, atomic explosion theory, 637

Sibson, R., on structures to withstand earth-

Siberian forest, atomic explosion theory, 637 Sibson, R., on structures to withstand earth-quakes, 599. See LETTER, 631 Sickness benefit, dockers' claim or scheme for,

Siebe, Gorman & Co., Ltd., breathing apparatus (trade publication), 216
Siebel, E., handbook of materials testing. Vol. 1 (review), 553

Siemens Edison Swan, Ltd., Ediswan-Mazda XA103 and XA104 transistors for home constructors, 96; wide-angle cathode ray television tubes, 128; PTFE insulated instrument wire, 345; illuminated acoustic ceiling panels, 589; Celotex illuminated acoustic ceiling panels, 589; internal telephone systems, 698; type R2285 transistor tester, 761; M. Carpenter appointed overseas technical representative, 787

Siemens Group, West German power reactor contract, 269
Siemens & Halske, radio telephone link by tropospheric scattering between West Berlin and German Federal Republic, 711 Sigmund Pumps, Ltd., Zero Leakage pump, 696 Signs, company, 126 Signal generator (trade publication), 618

 Lights, motor vehicle, working party on, 544
 Signalling, aircraft, to ground, 656 — Railway, at Newcastle Central Station, 624 — at Temple Mills marshalling yard, 738 Sigrist and Weiss photometer type UP21D (Southern Instruments, Ltd.), 533

Silbronze process, 101 and 104 brazing rods for (Suffolk Iron Foundry (1920)), 503 "Silent-Call" internal telephone system (Siemens Edison Swan), 698

Silica, fused, for spectrophotometer prism, 59 Silicides, developments in, by R. Kieffer and F. Benesovsky, 90
Silicon photodiodes, 743

— Plant at ICI, 309

Rectifiers (trade publication), 650
Silicone cable rubber, shore hardness, elastomer
E372 (ICI), 309

— in electrical insulation, by J. H. Davies, 309
— Emulsion M401 (ICI), 309
— Fluids, radiation effects on, 716
— Rubber models for crankcase deflection measurement, 304
Silicosis, discussion in Parliament on, 330

Silting of ports, discussion in Parliament on, 392

Silver Flame oil-fired domestic boiler (Kimber and Lovegrove), 96
Simca, Fulgar "dream" motor car, 200;
25th anniversary, 796; new factory at Poissy, 796; agreement with Chrysler Corp., 796
Simmonds, S., general biochemistry (review),

Simms Motor Units, Ltd., Simms Eberspacher turbocharger (trade publication), 60

Simon Engineering Group, sonic-valve-operated conveyor system, 341
Simon Handling Engineers, quick-action pipe coupling for pipelines, 505
Simon, Henry, Ltd., Industrial Plant Review, 801

Simon, Henry, Ltd., Industrial Plant Review, 801
Simon, Viscount, on place of technologist in
management, 207
Simon-Carves, Ltd., sulphuric acid plants
(trade publication), 155
Simons, E. N., on heat-treatment of steel
(book), 376
Simpson, R. W., flow over delta wings at low
speeds with leading edge separation, 311
Sims, W. J., Sons, & Cooke, Ltd., London
heliport, 543
Sincat petrochemical plant, loan for 791

heliport, 543

Sincat petrochemical plant, loan for, 791

Sinclair and BP Sales, Inc., formation of, 435

Sinclair, J., on coal mining law (review), 376

Sinclair Oil Corp., formation of Sinclair and BP Sales Inc., 435

Sindall, William, Ltd., new building for CIBA (ARL), Ltd., 707

Sinex Engineering Co., Ltd., internal vibrator for hoppers, 729; Turbo Vibrator for shell concrete, 738

Singer, C., history of technology. Vol. 5 (review), 216

Singham, J. R., review of Heat exchangers: applications to gas turbines (review), 376

Singleton, R. C., on composite construction in

Singleton, R. C., on composite construction in

steel and concrete for bridges and buildings (book), 29
Sintered bronze element in fuel filter, 45
Sintering furnaces for beryllium powder, 414

— Pressureless, of beryllium, by T. R. Barrett,

Al2, 437
Sinton, Dr. W. M., life on Mars theory, 637
Sintox alumina ceramic, 555
Sirius computer (Ferranti), 696
Sitdown shot-blasting cabinet (Guyson Industrial Equipment), 487
Sites factory information on 763

Sites, factory, information on, 763
Site Investigations Co., Ltd., site inspection (trade publication), 185

- Survey for stamp and press shop at Hawker Aircraft factory at Squires Gate, 213
Siting of atomic power stations. See Atomic

Siting of atomic power stations. See Atomic power stations

Sizewell atomic power station, marine survey

of, 240

Skid pans for Tow Line pipeline irrigation system (Wright Rain), 705

Skidding of bituminous road surfacings,

polishing of roadstone in relation to resistance to, by D. J. Maclean and F. A. Shergold (book), 343

"Skidtruck" hand truck (Conveyancer Fork Trucks), 453

Skia stabilization for mater boots, 86,87

Skie stabiliser for motor boats, 86-87
Skilled workers, shortage of, 635
Skin, PluViaC, for air-house (Gourock Ropework Co.), 610
Skinner, J. S., on house magazines, 364
Skinjack atomic submarine 546 Skipjack atomic submarine, 546

Skoda motor car, 329 Skoda Works, 100th anniversary 700 Skylark research rockets, telemetry equipment in, 113

Slabs, asbestos (trade publication), 283
— and beams design, tables for, by J. S. Cohen

— Flooring, British Standard on, 611
Slabbing mill, closed-circuit television for (Steel Co. of Wales), 691
Slag, analysis of, by K. Archer et al., 64
— Furnace, textbook, by W. Gumz, H. Kirsch and M-T. Mackowsky (review), 554
Slide rule, circular (General Industrial Co.), 420
Sliding doors (trace publication), 377

Sliding doors (trace publication), Slip bands, phenomenon of, 798-799 Slot machines. See *Vending machines* Small Business Investment Act (1958), purpose

- Firms, research in, 520

Firms, research in, 520
Research results availability to, 672
Small, Prof. J., on standard symbols, 567. See Letter, 631. See Correction, 695
Small & Parkes, Ltd., Roko nylon heavy tup belting for drop stamp, 504; Roko nylon transmission belting, 504; Don Brake Meter for motor vehicle testing, 612
Smart, R. M., review of Philips pavilion at 1958 Brussels World Fair, 778
Smeaton, John, anniversary of, 10
Smell disposal in Tees-side, 392
Smelt, R., appointment to Lockheed Aircraft

Smelt, R., appointment to Lockheed Aircraft

Corp., 537
Smith, D. F., Truscon Scholarship, 804
Smith, Sir E., retirement from board of ICI, 488
Smith, E. T. B., on rocket nozzles and exhaust

jets, 36
Smith, F. H., reviews of reference books, 310-311, 649; review of 1958 Book of ASTM standards including tentatives, 714; see also On the Shelf articles Smith, H. (Possil), Ltd., vertical plate bending

smith, H. (Possil), Ltd., vertical plate bending machine, 570
Smith, J. H., Wairakei geothermal power project, 398
Smith, O. J. M., feedback control systems (review), 252
Smith, Thomas, & Sons (Rodley), Ltd., MEI truck crane, 728
Smith-Gander, R. G. on accelerated curing

Smith-Gander, R. G., on accelerated curing tests on concrete, 759 Smithies, F., integral equations (book), 184

Smiths Aircraft Instruments, collaboration with Sperry Gyroscope Co., 135
Smith's Dock Co., Ltd., diesel-electric trawler Falstaff, 375

Smoke alarm (trade publication), 283 Control, position and prospects of, 226 — Density of diesel exhausts, Smokemeter for, Smoke density, Ringelmann Scale for determination of, 351

Dispersion of, 351 — Plumes for power stations in fog, 30. See Letter, 99

LETTER, 99

Smokeless fuel from coal by low-temperature carbonisation, 428

— Discussion in Parliament on, 234

— Warmco, 234

Smokemeter for smoke density of diesel exhausts, 196

SMS subminiature soldering iron (Electrical Remote Control, Ltd.), 454

Snap III thermoelectric generator, 394

Snap-Lock Switch (BSA Tools), 762

Snow, Frederick S., & Partners, new building for (John Mackintosh), 525

Snow, J. C., elected vice-president of MTTA, 562

Snowy Mountains hydroelectric and irrigation

Snowy Mountains hydroelectric and irrigation

scheme, progress of, 418

— Power station commissioned, 776

SNTL Technical Digest, 311

Social projects in industry, DSIR reports on,

Research. See National Institute of Econo-mic and Social Research

— Service, National Council of. See National Council of Social Service

Societé Anonyme de Machines Electrostatiques, URANIE reactor, 461. See also 141; packaged electrostatic generator, 320. Editio electrostatic generator,

389; Felini electrostatic generator, 466

Financière Italo-Suisse, oil pipeline from Genoa to Switzerland and Germany, 356
Society of British Aircraft Constructors, Ltd., de Havilland award for initiative, 170

 de Havilland award for initiative, 170
 of Glass Technology, glass-melting tank furnaces, by R. Gunther (book), 123
 of Instrument Technology, symposium on instrumentation and computation in process development and plant design, 783; presidential address on instrumentation as engineering discipling by I. F. tion as engineering discipline, by J. F.

of Motor Manufacturers and Traders, standards for the motor industry, 104 of Visiting Scientists, annual report of, 299 Sodium for fast breeder liquid-metal fuelled reactor, 317

reactor, 317

— Liquid, as atomic fuel, 314

— Rocket fuel, 279

— Technology of, papers on, 175

Soil consolidator (trade publication), 443

— Testing, dynamic, for stamp shop at Hawker Aircraft factory at Squires Gate,

Soiltest Inc., Levermatic soil consolidator (trade publication), 443
Solar Aircraft Co., gas turbines manufacture by Perkins, 764

Radiation conversion into electrical energy, Radio sextants, 744
System, inertial naviga ion in, by D. J. Cashmore, 679

See also Sun Solartron Electronic Group Ltd., activities of Solartron Electronic Group Ltd., activities of Solartron Group Productivity Services, 48, Infinite Persistence Solarscope oscilloscope 70; agreement with Consolidated Electrodynamic Corp. on pressure pickups, 71; 2nd management conference, 131; growth of, 764; type 902 digital voltmeter, 809 Solartron France SA, formation of, 764 Solartron Group Productivity Services, activities of, 48

ties of, 48
Soldering iron, SMS subminiature (Electrical Remote Control, Ltd.), 454
Solids, friction and lubrication of, by F. P. Bowden and D. Tabor (book), 746
Solid State Physics USSR, 617
Solution chemistry, papers on, 175

— No. 307 for cement removal (Grant and West), 477
Solvents (Charles H. Windschuegl Ltd.), 747

— Extraction process, Zebra column for, 172

- Extraction process, Zebra column for, 172
Somers, Walter (Materials Handling), Ltd.,
lifting tongs for close stacking of barrels
and cases, 808
Somervaille, I. J., on probability of service
failures, 806 failures, 806

Sommerfield, H. G., Ltd., compressed air plants, 722
Sopwith, Sir T., on Hawker Siddeley Group, 167

Sorby, George, Ltd., Crusader Brand NSR

quality ground round tool and die steel stock, 414 Sound absorption in ceiling, Siemens Ediswan Celotex, 589
Insulation. See Insulation

- Programme on high fidelity audio equipment and tape recording (BBC), 96 Reproduction, high quality, by J. Moir (review), 282

— Suppressing nozzles for jet aircraft, 456
Sounding techniques, development of (Kelvin & Hughes), 522 South Africa, electrical engineering industry in,

 Motor car assembly in, Government enquiry into, 322
 Multi-racial composition problems, 397
 African Railways, order for locomotives from Metropolitan Vickers South Africa (Pty) Ltd., 563

— America, dollar investment prospects, 354 — Industrial development, 723 South Coast Engineering Co., Limax filing

machine, 760 South Durham Steel & Iron Co., deep-water berth for supertankers in Persian Gulf, 231

— East Asia. See Asia, South East

East Asia. See Asia, Solin East
 Saskatchewan river dam, 739
 of Scotland Hydro-Electric Board, generating capacity position and prospect, 34; capital investment plans, 145
 Wales, aid for under-employed area, 328

Wales, and for under-employed area, 328
 Depressed area factory for Pressed Steel Co., Ltd., 328
 Southend Pier, polythene insulated and sheathed electric cable for, 374
 Southern Instruments, Ltd., Ansafone telephone message recorder, 37; Sigrist and Weiss photometer type UP21D, 533

Southern Italy Development Fund, loan by European Investment Bank to, 791 Southern Television, Ltd., contract with ITA for programmes from Dover, 480

Soviet Export, quarterly advertising review, 369
Soviet. See also Russia
Space/Aeronautics, new format version of
Aviation Age, 377
Space, Cislunar, details of, 333
— Dwell-linkages, by K. H. Hunt, 248
— Flight, by C. C. Adams (book), 61
— Opera, 457
— Pilots, monkeys as, 331

— Pilots, monkeys as, 331

Space Primer (Convair), 388

Space probe, Pioneer III, summary of details

Summary of, 615 Vehicle, Juno II, 388 - Projects, Russia, summary of, 615

— US, summary of, 615

Research, British, in collaboration with

Commonwealth, 362

— British, comment on, 661

— British, discussion in Parliament on, 609

— Comment on, 66

- Comment on, 66
- Committee on. See Committee
- Government, discussion in Parliament on, 598

International co-operation in, 662
International, discussion in Parliament

projects, discussion in Parliament on, 571 UK activities in, 616 — Ten steps into, note on, 155 — Transportation award, Louis W. Hill, to

Dr. R. H. Goddard, 207 Vehicles, lunar journeys of, calculations for,

Spaceflight Symposium, Commonwealth, pre-liminary notice, 362 Spain, atomic power station projected, 80

Spal, Dr. J., on regenerator efficiency. See Letter, 35

Spark erosion equipment RIG (Burton Griffiths), 761

Sparks, F. H., Co., aluminium curtain wall for office building, 804

Spartan Steel & Alloys, Ltd., manufacture of stainless steel in Birmingham, 58

Special relativity for physicists by 68

Special relativity for physicists by 68

Stephen

Special relativity for physicists, by G. Stephenson and C. W. Kilmister (review), 410 Specific surface of concrete aggregates and its

relation to workability of concrete, by B. W. Shacklock and W. R. Walker (book), 253

Specifications for rubber products: call for rationalisation, by H. F. L. Jenkins and F. Rastow, 476 Bastow, 476

— See also British Standards Institution
Standards; Standardisation

Spectrograph, magnetic particle, 771

— Particle, broad range, 771

— Particle, multichannel, 771

Spectrometer magnetic particle, 771

Spectrometer, magnetic particle, 771

Neutron time of flight, 770
 Spectrometry, gamma, in health physics, 236
 Neutron, transistorised data recording and analysing system for (EMI Electronics), 182

Spectrophotometer for analysis in boiler house, Prism, fused silica for, 59
 Spectroscopy and optics, glossary on, 475

Spectrum analyser for audio and supersonic frequencies (James Scott & Co.), 808

— Neutron, measurement of, 770

— Power, of non-stationary shot noise, by L. P. Hyvarinen (book), 586

of Successful wayers study of 121

of Sun's radio waves, study of, 121 Speech and hearing, connection between, 788

Speed control. See Governors

— Limits in Belgium, 644

— in Netherlands, 644

— Regulations for London traffic, 297

— in Western Germany, 644

— Record, Water, US challenge, 694 See also Overspeed

Spencer, H. C., technical drawing (review), 342 Spencer & Halstead, Ltd., blast cleaning rooms,

Sperry-Atlas gyro-hydraulic steering control for tanker *Hadrian*, 653

Sperry Gyroscope Co., collaboration with Smith Group, 135; reorganisation of administration, 231; inertial guidance system for X-15 upper atmosphere research aircraft, 362; new factory at Bracknell, 604 SPERT-III reactor, criticality achieved, 79

— Reactor, experiments on, 79 Spike aerial. See *Aerial* Spin, atomic, electrical uses, of, by G. Phillips, 743

- Dryers, sales position of, 145
Spindle, grinding, hydrodynamic gas bearings for, by Dr. S. A. Sheinberg and A. M. Kharitonov, 677

- Triangular, from flat brass strip (Plessey), Valve, for hydraulic pumps (Towler Bros.),

625 Spinning lathe. See Lathe Sponge iron, direct reduction of iron ore into,
HyL process (M. W. Kellogg), 159

Spotlight on Television, BBC booklet, 128

Sprag clutches (trade publication), 554

Spray coating, powder, 31-C (Metallizing
Equipment Co.), 504

Forming of high temperature materials, 652

Forming of high-temperature materials, 652 Fuse hardfacing, automatic machine for (Deloro Stellite), 503

(Deloro Stellite), 503
Washing machine, industrial, Efco (Electro-Chemical Engineering Co.), 729
Spraymat de-icing system, Napier, 749
Springs (trade publication), 554
Balance, Mancur, by J. F. Perrin, 355.
See Letters, 419, 531
Cleaning guide for motorists, 393
Coil. See Coil Spring Federation
Rubber, for air compressor foundations, 214
Testing machine (W. & T. Avery), 486

Testing machine (W. & T. Avery), 486 Springfields Works, uranium processing expansion at, 238; beryllium fuel cans project, 239

Sprinkler irrigation, 704

— Lightweight low-capacity (Wright Rain),705

Spurrier, Sir H., on position and prospects of Leyland Motors, 296

Leyland Motors, 296

Sputnik I satellite, summary of details of, 616

III satellite, summary of details of, 616

Satellite, summary of details of, 616

Satellite, value of, 333

Squash-O-Matic drink-vending machines (Allied Produce Co., Ltd.), 325

SSA. See Statistical sampling and analysis

St. Bernard road tunnel, 162

St. Bernard road tunnel, 162
St. Ives Sand & Gravel Co., Ltd., hardcore from disused aerodromes, 543

Lawrence Estuary, nuclear-powered ice-breakers for, 291 - Seaway, comment on, 291; opening of,

566

Stabilisers, hydrostatic drive for, 655

— for nuclear ship Savannah, 795

— Skie, for motor boats, 86-87

Stability limits of turbo-alternator, 254 Stability limits of turbo-alternator, 254
Stacey, N. A. H., on distributive thaw, 787
Stacking. close, of barrels and cases (Walter Somers), 808
Staff location system, Nira Tele-Tracer (Cass Electronics, Ltd.), 357
— Planning, objects of (supplement), 517
— Policy, objects and planning (supplement), 517
Staffe banding machine feature has a (Chambar)

Staffa bending machine for steel bars (Chamber-lain Industries), 761 Staffordshire and Worcestershire canal im-

provements, 776 Stainless steel. See Steel Stamford bypass on Great North Road, 776

Stamp for Big Ben centenary, 298

— Drop, Roko tup nylon belting for, 504

— Shop foundations at Hawker Aircraft factory at Squires Gate, 212

Stanchion. See Beam; Column

Standards, application in the firm, by B. White

Standards, application in the firm, by B. White,

to industry, conference on, 781
Batteries for agricultural industry, plea for,

Concrete, revised by American Concrete Institute, 543

Department, company, operation of, by S. T. Robinson, 781
Engineering group, IPE proposals on, 457

Housing, inquiry plea, 699
Institution, British. See British

Standard Motor Co., Ltd., dispute over smaller gang system, 48; discontinuance of Standard motor cars, 644 Motor industry, 104

Motor vehicle, working party on, 544
Radiation protection (Euratom), 302
Symbols, by Prof. J. Small, 567. See
Letter, 631

Standard Telephones & Cables, Ltd., Standard Sunbury engine indicator (trade publication), 60; Zebra computer for ARA transonic wind tunnel, 187; remote-controlled transmitters for Ongar Radio Station, 307; brochure on 75th anniversary, 604; Stantec Zebra digital computer (trade publication), 802 (trade publication), 802

- United States. See United States National

Bureau of

Uranium isotopes, 110
Standardisation in Building, ECE meeting, 611

Grinding wheels, 125 International Organisation for. See Inter-

national Organisation
Stanford University, linear accelerator, 772
Stanley Works (G.B.), Ltd., hand shaper file or plane, 64

Stanlow refinery, pipeline for. 663

— Udex aromatic extraction unit for (Universal Oil Products), 620 — Underground pipeline, 611 Stantec Zebra digital computer (trade publica-

tion), 802 Starr, A. T., on telecommunications (book), 61 State-controlled firms in Germany, sale of, 259

Service, creative leadership in (survey), 270 Statesman electric typewriter (Remington Rand), 698 Static electricity in aircraft fuelling, 648

Statistical Handbook, BISF, 311 - Sampling and analysis (SSA) as alternative to work measurement, 245 Tests as aids to decisions, by W. E. Duckworth, 459

Statistics for optimum process operating conditions, 783 Stay-Dry foamed glass insulation for piping

(Pittsburgh Corning Corp.), 183
Steam carriage, Gurney, model of, 424
— Generator, mobile, Stone-Vapor, 134
— Nuclear, Daniels-Boyd, details of, 268
— Reader, for underdeveloped countries,

— as train heater, Stone-Vapor, 134
— from Geothermal sources, 398

Geothermal, utilisation of, 401 Lines, Bi-Seat control stop valve for (Sir W. H. Bailey & Co., Ltd.), 621 Plant, iron castings for, higher working

temperatures study, 683 Power plant for underdeveloped countries (Reader), 432
Roller. See Road roller
Turbine. See Turbine

Turbine. See Turbine

Steampacket three-pass packaged boiler (Cradley Boiler Co., Ltd.), 295

Steamship. See Liner; Ship

Stedeford, Sir I. A. R., appointment to board of British Aluminium Co., Ltd., 328

Steeds, W., the motor vehicle (review), 443

Steel, alloy, turning with ceramic and carbide tools, PERA report on, 319 Vacuum melting, 626

Bars, bending machine for (Chamberlain Industries), 761
 Belt conveyor, Sandvik, for mineral wool blankets (Mineral Wool Insulation Co.),

- Boron, balls for earthquake safety of Japanese atomic power station, 463

Canning for atomic reactor, 138 Steel & Co., acquisition of F. Taylor & Sons and of R. H. Neal & Co., 199; management direction, 516

Steel Co. of Wales Ltd., strike of maintenance workers, 48; position and prospects of, 71; slackening of demand, 135; automatic canteen, 325; tinplate in coils at Velindre Works, 478; ore handling at Margam Works, by J. E. Robson, 593; closed circuit television for slabbing mill at Abbey Works, 691; annual report, 732 — and concrete, composite construction in, for bridges and buildings, by l. M. Viest, R. S. Fountain and R. C. Singleton (book), 29 — Construction, German, committee on, by O. Steinhardt and K. Mohler (book), 746 — as construction material, 525 — Die, Crusader Brand NSR ground round stock, 414 — Foundry. See Foundry — Furnace. See Furnace — Girder bridges, British Standard (revised), 280 — Heat treatment of. See Heat treatment Steel Co. of Wales Ltd., strike of maintenance

280

Heat treatment of. See Heat treatment
Industry, Germany, pattern of, 700

Industry, nationalisation of, W. Benton Jones on, 135

— Politics in, 359

— Positions and prospects of, 135, 732, 791

— Television in (BISRA), 191

Microstructure of. See Metallography

Mild, Eldair alligator shear for (George Cohen, Sons & Co.), 696

— Friction coefficient of, effect of Sulfinuz treatment on, 119

Friction coefficient of, effect of Suffinize treatment on, 119
 Tubes, Besco plate bending rollers for (F. J. Edwards), 454
 Nickel alloy (trade publication), 283
 Nitralloy, wheel spindle on Churchill roll-grinding machine, 127
 Nitrogen determination in (book), 411

— Output of, 694 — — in "free world," 694

— in Russia, 694
eel, Peech & Tozer, medium width steel
strip production at Brinsworth Mill, 22;
new strip mill project, 636
- Plastics coated, Stelvetite, applications of,

Production in China, statistics on, 419

Froduction in China, statistics on, 419
— in Europe, statistics on, 419
Steel, R., on "just price" policy of Servomex Controls, Ltd., 3. See also Vol. 186; on training and advancement at Servomex Controls, 170
— Rail. See Rail
— Ships classification and construction, rules and regulations for 310

Ships classification and construction, rules and regulations for, 310
for ship construction, reduction in number of grades of, 359
Stainless, liner for ZETA, 703
Manufacture in Birmingham (Spartan Steel and Alloys, Ltd.), 58
for road tankers, 748
Spray-forming with plasma torch, 652
Tube (trade publication), 377
Uranium dioxide cermets as fuel components for APPR reactor, 141
Strip, medium width, production at Brinsworth Mill of Steel, Peech and Tozer, 22
Tool, Crusader Brand NSR ground round stock, 414

stock, 414 Users Section of BISRA, 99

Vacuum melting, 626
See also European Coal and Steel Commun-

Steelmaking, pre-refining of hot metal for electric arc furnace (Brymbo), 657 Steels Engineering Installations, Lt heating coil developments, 250 Ltd., tanker

Steels Engineering Products, Ltd., rationalisation agreement with Herbert Morris, Ltd., 199; ball-bearing slewing rings, 340

Ltd., 199; ball-bearing slewing rings, 340

Steels Group, purchase of R. H. Neal & Co.,
Ltd., and F. Taylor & Sons (Manchester),
Ltd., 199, 595

Steelwork for Heinz factory, Kitt Green
(Peirson & Co., Ltd.), 577

— Shot-blasting machine for (Cleveland
Bridge & Engineering), 439

— Structural, fabrication by Dominion Bridge
Co., Ltd., 423

— Structures, by E. F. Wooldridge and N.
Lancaster, 220

— Tubular, for Arcon buildings fabricated in

Lancaster, 220

Tubular, for Arcon buildings fabricated in Lagos, 543

Steelworks cranes, research on, 163

Durgapur, staff training scheme in UK, 537

in India, new projects, 791

for Pakistan at Multan, 791

Steering control, gyro-hydraulic, for tanker Hadrian (Sperry-Atlas), 653

Gear, marine, hydrostatic drive for, 655

Hydraulic system (General Motors Corp.). - Hydraulic system (General Motors Corp.),

708
Hydraulic unit for small vessels (Keelavite Hydraulics, Ltd.), 487
Stein & Atkinson Ltd., reheating furnaces for Brinsworth Mill, 22
Steinhardt, O., German committee on steel construction (book), 746
Stelvetite plastics coated steel, applications of, 210

Stephan, E., optimum transmission gearing for

Stephan, E., optimum transmission gearing for machine tools (review), 618

Stephen, Alexander, & Sons, Ltd., turbocharged Sulzer diesel engine for tanker British Fulmar, 134; Pescara GS34 free piston gasifier, 134; Sulzer RSAD76 15,400 b.h.p. two-stroke turbocharged diesel engine, 688

Stephen, D. D., on digital computers in design of electrical machines, 718

Stephenson, G., special relativity for physicists (review), 410

Stephenson, Robert, anniversary of, 10

Stephenson, Robert, anniversary of, 10

Stepping tube, trochotron high-speed decimal (Mullards), 653

Stereophonic broadcasting, "compatibility" circuit for single channel reception (Bell Telephone Laboratories), 384

Sterilisation in tinned food production at Kitt Green factory of H. J. Heinz, 782

Sterimag stereoscopic magnifier (C. Baker Instruments, Ltd.), 730

Sterling Foundry Specialities, Ltd., shakeout machines for solidified castings, 722

Stevens, E., Ltd., Judgelite vitreous-enamelled aluminium, 587

Stewart, J. L., circuit analysis of transmission lines (book), 184 Stewarts Lane depot, railway maintenance extensions, 776

extensions, 776

Stewarts & Lloyds, Ltd., position and prospects of, 167; progress of new rolling mill, 167; expansion programme, 167; iron and steel works buildings at Corby Works, by T. E. Clements and J. T. E. Williams, 220; air conditioning for strip mill control cabin, 557; Bilston training centre, 605

Stickting Kernvoortstuwing Konywardiische.

Stichting Kernvoortstuwing Koopvaardijsche-pen, nuclear ship research body, 548 Stickland, A. C. (Ed.), Reports on Progress in Physics (review), 93

Still, W. M., & Sons, Ltd., hot-drink vending machines, 267; hot food dispensers, 325
Stillite Products Ltd., Stilag insulating sections for underground pipework, 579

Stirling, Maynard & Partners, Stamford bypass on Great North Road, 776

Stirrer, laboratory, RZR (Jones and Stevens), 454

Stocks, trends in levels of, 386 Stocking in warehouse of Benton & Stone, 721 Stoke-on-Trent, gas liquor disposal problem,

Stocking in warehouse of Benton & Stone, 721
Stoke-on-Trent, gas liquor disposal problem, 672
Stoker, miniature chain-grate, automatic control (BCURA), 613
Stone-Chance Ltd., equipment for Jakhau and Jegri lighthouses, 681
Stone, J., & Co. (Deptford), Ltd., exhibition of transport equipment, 134; Mekydro transmission unit for diesel locomotives and railcars, 134; Faiveley pantograph for overhead electrification of British Railways, 134; diesel-alternator sets for diesel multiple-unit Pullman trains, 134; heating, ventilating and air-conditioning equipment, 134; Stone-Vapor steam generators, 134
Stone-Smith overspeed control (J. Stone), 134
Stone-Smith overspeed control (J. Stone), 134
Stone-Vapor steam generator, mobile, 134
— Steam generator as train heaters, 134
Stonebridge Electrical Co., Ltd., impulse counters (trade publication), 650
Stoneware, chemical and industrial containers and plant (trade publication), 554
Stonex, K. A., on road accidents in US, 368
Stop valve. See Valve
Storage cylinders for liquid oxygen (British Oxygen Gases), 684
Stothert & Pitt Ltd., cargo winch with automatic excitation control, 664
Stove, cooking. Bleuet, for campers, 224
Straightness of plug gauges and other cylindrical components, apparatus for measuring, by F. R. Tolmon, 124
Strain-hardening materials for structural frames, 276
— Measurements, replica device for, using grid, by V. M. Hickson, 483
— See also Stress
Strainer, floating, Dolphin (Megator Pumps & Compressors), 229
— Suction (trade publication), 474
— Drum (Watson), 621
— and valves (trade publication), 443
Stranding machine, fixed bobbin, for electric cables (Larmuth & Bulmer Ltd.), 623
Strapping bands, HSD tensioner for (Packers Supply Co., Ltd.), 293
Strata control glossary, tri-lingual (book), 29
Stratford-on-Avon canal improvements, 776
Stratffarrar and Kilmorach hydro-electric scheme, contract for, 322
Stratosphere, strontium 90 in, 763
Street lighting standards, aluminium, competition for, 560

Street lighting standards, aluminium, competition for, 560
Stress, alternating. See Fatigue

— Analysis developments, 482

— Group. See Institute of Physics

— Replica device using grid, by V. M. Hickson, 483

— Without strain measurement by F. K.

- Without strain measurement, by F. K. Ligtenburg, 483
Relief, low temperature, of welded platework, by J. C. Dixon, 651. See LETTER, 695

695

— in recirculating type annealing furnace (Modern Furnaces & Stoves Ltd.), 785

Stressing bars and jacks, Lee-McCall, for stamp shop at Hawker Aircraft factory at Squires Gate, 214

Strike, coal miners in Belgium, 355

— Demarcation, 605, 669

— on interunion disputes, 605

— Kariba Dam employees, 428

— Maintenance workers, Steel Co. of Wales Ltd., 48

Ltd., 48 Review of 1958, 9

at Universal Pattern & Precision Co., Ltd. 105

105

Unofficial, reasons for, 669
Strip, automatic gauge control, 521

Brass, for triangular spindle (Plessey), 622

Copper alloy, Kuniform, 555

Cutting machines, automatic production (Press Equipment), 600

Forming machines, Heenan manual on (book), 92

Mill, Colvilles, 354

(book), 92
Mill, Colvilles, 354
— Colvilles, Treasury loan for, 103
— Control cabin, air conditioning for, at Stewarts and Lloyds Ltd., 557
— Steel, Peech & Tozer, 636
— Richard Thomas & Baldwins (Newport), financing of, 354
— Roll-formed, high-frequency welding of aluminium tube from (Elm Engineering), 446

Rubber conduit, for cable (Vulcascot), 633

Rubber conduit, for cable (Vulcascot), 633
Steel, medium width, production at Brinsworth Mill of Steel, Peech & Tozer, 22
Tinplate, in coils, at Velindre Works of Steel Co. of Wales, 478
and wire (trade publication), 283
Wire rod and, Lindsay's international register, 1957-1958 (review), 310
Strontium 90 levels in stratosphere, 609
as radioactive light source, 497
in stratosphere, 763

Structural analysis by digital computer, by M. B. Abbott, 666

— Components, probability of service failures of, by I. J. Somervaille, 806

— design, theory of, by W. S. Hemp (book),

— Engineers, Institution of. See Institution
— Frame analysis by electronic computer, by Dr. E. Lightfoot and F. Sawko, 18
— Steelwork. See Steelwork
Structures analysis, by A. W. Henry and L. G. Jaeger (book), 154
— Concrete, on Danish railways, durability and maintenance of by A. Jeppesen, 384

maintenance of, by A. Jeppesen, 384

Earthquake resistant, building of, by D. A. Howells, 346, 631. See Letter, 599

Elastic design of, 275

Engineering, problems in, by R. J. Ashby and A. H. Chilver (book), 184

Fatigue in, DSIR committee on, 739

Eire protection by ashestos and ashestos

Fire protection by asbestos and asbestos cement (booklet), 804
Framed, limit design of, by Dr. J. Heyman,

Geological, and maps, by A. Roberts (book), Iron and steel works, research and develop-

ment in, by Dr. J. S. Terrington, Buchanan and P. D. Thompson, 221 Plastic design of, 275 Reinforced concrete. See Concrete,

Statically determinate, design of, 276
 Steelworks, by E. F. Wooldridge and N. Lancaster, 220

Tennester, in injected structural members

Temporary, pin-jointed structural members for (Guyrex Equipment, Ltd.), 408 Thin Shell building by F. Candela, 495

— Ihin Shell building by F. Candela, 495 — See also Superstructures Strut. See Beam: Column Studs and inserts, Rosan permanently locked (Instrument Screw Co., Ltd.), 557 Stud welding. See Welding Stud Welding Applications Co., stud welding equipment for arc welding transformers, 730

730
Students from dependencies in U.K., 733
— in Russia, statistics, 701
— University, statistics forecast on, 235
Studentships, science, NATO, discussion in Parliament on, 330
Sturrock, F. G., economic use of farm machinery, 227
Sturroup t. Engineering Co. Ltd., gas scrubbers

Sturtevant Engineering Co., Ltd., gas scrubbers (trade publication), 474; Ludgate dust collector (trade publication), 502
Stuttgart, factory-built roads, 543 Style C-switch, cam-operated rotary (Chilton),

Styrene in synthetic rubber production, 25 Sub-Aqua-Jet underwater tug (Tough Bros.),

Subak, W. K., review of practical electrical machinery, by F. Unger, 123

Submarine, atomic powered, Dreadnought, 675, 668; floating dock and hull design for, 80; reactor plant for, 367; commander and crew of, 546; Skipjack-type propulsion unit for 546; keel laying of, 735

— Powered, French, fuel for, 675

Atomic powered land, based, at Doupreed

- Atomic powered, land-based, at Dounreay,

Atomic powered, land-based, at Dounreay, 675
— Powered, RN Programme, 675
— Powered, Skipjack, 546
— Powered, US, 545
— Cargo vessel. See Ship, cargo and Tanker
— Tanker. See Tanker
Submersible sump pumps, air-driven (Blagdon-Durham, Ltd.), 455
Subscriber trunk dialling, by D. A. Barron, 160
Subsidence, mining, report (I.C.E.), 579
Subsidising of power supplies in underdeveloped countries, 530
Subsonic drag and pitching moment characteristics of slender cambered bodies, by K. D. Harris (book), 778
Suction drainer for machine tool sumps (Progress (Universal) Ltd.), 358
— Strainer (trade publication), 474
— Drum (Watson), 621
Sud Aviation, Caravelle jet airliner, 536; Alouette helicopter, 536; Djinn helicopter, 536
Suffolk Iron Foundry (1920), 101 and 104 brazing rods, 503
Suggestion schemes, association proposal for, 451
— by M. H. Bradshaw-Jones, 99-100. See

451 by M. H. Bradshaw-Jones, 99-100. See LETTER, 131 by H. C. Burton, 259 by P. Clavell Blount, 163. See LETTERS,

- Conference, IWS, 701

— by R. A. Shepherd, 67, 131, 291-292.

See LETTERS, 99, 169

— Successful (IWS booklet). See LETTERS, 3, 67, 99, 131, 132, 163, 195, 227, 259, 291

Sulby Engineering Development Co., Ltd., Perf-A-Matic rotary perforator for commercial stationery, 262

Sulfinuz process. See Heat treatment

Sulphiding. See Heat treatment

Sulphur release from house coal (BCURA), 613

Sulzer Bros., Ltd., death of Dr. H. Sulzer, 68

Sulzer diesel engine, RSAD76 (Stephen), 688

Sulzer diesel engine for tanker British Fulmar Sulzer diesel engine for tanker British Fulmar (Alexander Stephen), 134

Sulzer, Dr. H., obituary, 68 Sulzer turbo-blowers for diesel engine for tanker British Fulmar (Alexander Stephen),

Summers, John, & Sons, Ltd., trading results of, 135; applications of Stelvetite plastics coated steel, 210; annual report, 732 Summers, R., on position and prospects of steel industry, 135

Sump, machine tool, suction drainer for (Progress (Universal) Ltd.), 358

Sump pumps, submersible air-driven (Blagdon-Durham Ltd.), 455

Sun as radio noise source, 744
Sun Shipbuilding & Dry Dock Co., low-temperature stress relieving of welded platework 651

work 651

— Spectrum of radio waves of, study of, 121

— See also Solar

Sundridge Park Management Centre, course on modern developments in marketing and distribution, preliminary notice, 812

Sundstrand drive for aircraft electrical equipment (English Electric), 296

Super-Vee air filter panel (Vokes), 760

Superconducting computer elements: cryotrons, by Dr. J. M. Lock, 550

Superconductivity of metals, 465

Superconductor, properties of, 550

Supergrid, overhead double circuit 275,000 volt, for Northfleet-Canterbury line, 291

Superheater for atomic reactors, 267

— for atomic reactor at Sioux Falls, 267

— Nuclear-fired, for Puerto Rico atomic power plant, 79

Superlatives, Plain Words on, 530

Superpoyal effects on terrestrial communications

Superlatives, Plain Words on, 530 Supernova effects on terrestrial communica-tions, 744

Supernova effects on terrestrial communications, 744

Supersonic aircraft. See Aircraft

— Flow, unsteady, potential theory of, by J. W. Miles (review), 681

— Wind tunnel. See Wind tunnel

Superstructure, aluminium, in liner Oriana (Vickers-Armstrongs Ltd.), 505

— to iron and steel works buildings, by K. F. Geesin, 220

Supertankers. See Tankers, super

Supervising Electrical Engineers, Association of. See Association

Supervisors, Training Within Industry for, at KLG Sparking Plugs Ltd., 382

Supplement: The 1960's Now, facing 512. See also 481

Supply, Ministry of, Invitation to Science Graduates (booklet), 235

Support leg, lightweight, for rock drills (Consolidated Pneumatic Tool Co., Ltd.), 230

Supreme Automatic Vending Co., Ltd., coffee and tea vending machines, 267

Sureseal valve for bag filling plant (trade publication), 443

Surface activating agents, 747

— Condenser, See Condensing plant

publication), 443
Surface activating agents, 747
— Condenser. See Condensing plant
— Finish, Diavite Microtester (H. Hediger), 352
— for granite, Thermal-Texturing (Union Carbide), 284
— Heaters, electric, Isomantle, for grease tanks, 382

Massurpment. "Paivite Microtester" for

Measurement, "Daivite Microtester" for (H. Hediger), 352
Roughness tester (British Physical Laboratories), 69

Treatments, dry bearing (Glacier Metal), 503 Water Year-book of Great Britain 1956-57, 291

Surfacing machine. See Boring machine, universal horizontal

Surgery, brain, by proton beam, 302
Suspension design in motor cars, electronic computer for problems in (A. V. Roe), 644
Sutherland, R. L., engineering systems analysis (review), 586

(review), 586

Swamp lands, Albion-Cuthbertson Water Buffalo tractor transporter for (Albion Motors), 358

Swan, Hunter & Wigham Richardson Ltd. position and prospects of, 572

Swan, Sir Joseph, and development of the electric lamp, by Dr. J. N. Aldington, 231

Swaninathan, V. S., on scientific and industrial research in India, 300

Swansea, Crymlyn Burrows, site of factory for Pressed Steel Co., Ltd., 328

Swartwout Co., Ltd., formation of, 456

Sweden, atomic power station projected, 80

— Self-service petrol pumps, 369

Swedish State Power Board, transformer bank for, 375

Sweeping machines for factorics, 524

Sweeping machines for factories, 524 Swelling tests on rubber products, 476

Swenson Evaporator Co., manufacturing rights, agreement with Incandescent Heat Co. Swiss "Rigid" transportable drilling, boring and milling machine for AEI, 562
Switch, cam-operated rotary, Style C (Chilton),

Control (Honeywell Controls), 327 Ignitron as, in pulsing circuits, 608 Instrument (W. G. Pye), 70 Micro (trade publication), 746

— Sub-sub-miniature control (Honeywell Controls), 327
Oil, 400A (George Ellison Ltd.), 327 Photo (trade publication), 802 Snap-Lock (BSA Tools), 762

Switchgear, air-insulated metal-clad (Ferguson Pailin), 327

— Circuit-breakers, air-break, up to 500 MVA at kV (Reyrolle), 499

at kV (Reyrolle), 499

— Breaker, air-insulated (George Ellison Ltd.), 327

— Breaker, flameproof hand-operated (Belmos), 665

— Breaker, oil-operated, Dialam bushings for (Permali), 557

— Switch. See Switch
Switching circuits with computer applications, by W. S. Humphrey, Jr. (review), 585

Sykes, Henry, Ltd., Layton diaphragm pump, 697

Symbols company, 126

697
Symbols, company, 126
— Standard, by Prof. J. Small, 567. See LETTER, 631
Symonds, Ralph, Ltd., prefabricated timber drying shed, 739
Symposium on vacuum technology, fourth national: transactions, by W. G. Matheson (review), 553
Syndicates, for agricultural machinery, pure

son (review), 553
Syndicates for agricultural machinery purchase, 535
Synthetic fluids, radiation effect on, 716
— Rubber. See Rubber
System design of digital computers at National
Bureau of Standards: methods for high speed addition and multiplication (review), 682

ems engineering analysis, by R. L. Sutherland (review), 586 Szabo, I., higher technical mechanics (review), 122

Szechwan, economic progress in, 791

T100 commercial vehicle (Berliet), 45
Table, compound-slide, low height (Grimston Electric Tools Ltd.), 292 Conversion factors and, British Standard, 553

— Factors and. Part I (book), 778 for design of beams and slabs, by J. S. Cohen (book), 184 for interpolation over cartesian grid, by H. E. Salzer and G. M. Kimbro (book), 586

H. E. Salzer and G. M. Kimbro (book), 586

Tabor, Dr. D., on friction between tyre and road. See Letter, 631; friction and lubrication of solids (book), 746

Taccone diaphragm moulding machine (Baker Perkins), 722

Taccker, R. G., on International School of Nuclear Science and Engineering, 228

Tagus, bridge over, at Lisbon, competition for, 643

Tait's Electrical Directory of Australia and

Tait's Electrical Directory of Australia and New Zealand, 1958-59 (review), 649 Take-over bids, Plain Words on, 34

Talbot Stead Tube Co., Ltd., tube for atomic power plant, 491; Metica metal-clad graphite tube, 555
Tally counter, Domatic (EJF Manufacturing Co.), 166
Talymin gauge for gene took

Co.), 166

Talymin gauge for gear teeth errors, 614

Tamar Bridge, construction of, 171

Tandem generator. See Generator

Tanganyika, World Bank mission to, 776

Tangyes Ltd., Colonial horizontal steam engine, 381; Hydroflo reciprocating oilpowered pump, 534

Tank, grease, Isomantle electric surface heaters for, 382

— Heating coils, 250

— Natural gas, at Canvey Island (North Thames Gas Board), 232

— Gas rupture of, 232

Tanker, Altair, diesel engined, 752

— for Ampol Petroleum Ltd., Australianbuilt, 16

— Atomic-propelled, British project, 546

— Atomic-propelled, British project, 546 — Propelled, with gas-cooled reactor (US),

 Propelled, reactor project for (Babcock & Wilcox), 547 Propelled, reactor project for (Vickers), 547, 638

 Propelled submarine (Mitsubishi), 675
 British Fulmar, diesel engine for (Alexander Stephen), 134 Construction trends, 42

Heating coils, developments in, 250
Natural gas, Methane Pioneer, 232, 233; discussion in Parliament on, 731

- Pneumatic hose-handling equipment for faster turn-round (ESSO), 563
- Road, AT nickel for, 748
- Stainless steel for, 748 — Super, deep-water berth for, in Persian Gulf, 231

Tannating process for paint pretreatment, 555 Tantalum capacitors, solid-electrolyte (Plessey),

Tap changer, on-load, Jansen type (Transformers (Watford)), 326

Tape control of drilling machine, Wadkin (EMI Electronics), 762

— of machines and production lines, 524

— Magnetic, machinery control by, 526

— Punched, machinery control by, 526

— Recorder, battery, miniature (Fi-Cord Ltd.), 454

454
 — for data processing (Emidata 1), 101
 — Deck, Gramdeck, for use with radiogram (Andrew Merryfield), 564
 — Recording, BBC programme on, 96
 Tapping machine. See also Boring machine, universal horizontal

universal horizontal

Tariff, cuts in, European Economic Community report on, 483

— Effect of European Common Market on, 126

— European Economic Community, comparison with UK (report), 290

— on nuclear products, 176

— United Kingdom, comparison with European Economy Community (report), 290

Tarkowski, Z. M. T., work on interviewing, 48

Tarmac Ltd., London-Birmingham motorway, 776

Taskmaster range of Flurolier fluorescent lamp

Taskmaster range of Flurolier fluorescent lamp

Taskmaster range of Flurolier fluorescent lamp fittings, 198
Taube, Dr., on man-machine relationships, 489
Taunsa Barrage, Pakistan, opening of, 473
Tawse, William, Ltd., Loch Glashan hydroelectric scheme, 579
Tax relief for apprentice training, 105
— Structure, Plain Words on, 290
Taxation reduction in budget, plea for, 162
Taxpayer, simple guide to, by J. Wood (book), 162
Tavlor, A. L. on nuclear ship propulsion pros-

Taylor, A. J., on nuclear ship propulsion prospects, 548
Taylor, B., on boiler refractories, 619
Taylor, D., on radiation hazards and protection (review), 377; on instrumentation for nuclear power stations, 750
Taylor Electrical Instruments Ltd., signal generator (trade publication), 618
Taylor, F., on Taylor Woodrow, 732
Taylor, F., & Sons (Manchester), Ltd., purchased by Steels Group, 199, 595
Taylor, F. J. R., feed water and boiler water standards in CEGB, 247
Taylor, John, & Sons, cooling plant for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 783
Taylor, T. A., on high-temperature properties

Taylor, T. A., on high-temperature properties of ceramics and cermets, 91 Taylor, W. J., on British earth satellite programme, 330

Taylor Woodrow, monolithic group sculpture of Taylor Woodrow sign, 126; annual report, 732

Taylor Woodrow (Arcon) Ltd., formation of, 201

Taylor Woodrow (Building Exports) Ltd., contract for Arcon prefabricated buildings for National Iranian Oil Co., 391; tubular steelwork fabricated in Lagos, 543
Taylor Woodrow Construction Ltd., pipeline for effluent from Winfrith Heath, 394; contract for railway building at Hither Green, 495
TBP. See Tributyl phosphate
Tea vending machine, 267, 325
Teachers, National Union of See National Union
— in Technical Institutions. Association of

Technical Institutions, Association of. See Association Teaching of mathematics, Manchester report on, 529

on, 529

New methods investigation at Rensselaer Polytechnic Institute, 67

See also Education

Teasdale, J. A., on nuclear-powered submarine cargo vessels, 676

Technical Advertising Agency—What it is, What it Offers (book), 57

Technical colleges, student wastage in part-time courses at, 143

Technical Designs Ltd., Trainer-Tester charts, 511

Drawing. See Drawing
Technical Education in UK Dependencies
(publication), 323
— Education. See also Education
Technical Guide, Year Book and, 1958-1959
(review), 649

Institutions, Association of See Associa-

Institutions, Association of. See Associa-

 Press, Council of Trade and. See Trade and Technical Publications service (trade publication), 586

and Technical

— Publications service (trade publication), 586

— Representatives, course for, 126

— Sciences, Academy of. See Academy

— Thermodynamics, introduction to, by E. Schmidt (review), 60

Technical and Vocational Education in the USSR, by M. I. Movsovic, 733

— Writer, by J. W. Godfrey and G. Parr (book), 123

— Writing, bibliography of, 553

— — RIC premium awards for, 573

Technion (Israel), activities of, 259

Technologists, welded construction for, by P. Sahmel (review), 501

— See also Scientists and technologists

Technology, history of. Vol. 5: late 19th century, by C. Singer, E. J. Holmyard, A. R. Hall, and T. I. Williams (review), 216

— Insignia Award in, 727

— Welding, economy and productivity through (review), 501

Technoscope hole viewer (Degenhardt & Co., Ltd.), 422

Tecon timber products for roof construction,

Tecon timber products for roof construction, 543

543
Teddington Aircraft Controls Ltd., developments in bellows applications, 39; stainless steel liner for ZETA, 703
Teddington Industrial Equipment Ltd., warning equipment for air compressors, 192; design development of Transmatic electronic controller for air conditioning systems, 522
Tee R. G. on power from heat direct, 259

systems, 522

Tee, R. G., on power from heat direct, 259
Teenagers' Fair (Blackpool), preliminary notice, 563

Tees-side, smell disposal, 392
Teeth, acid erosion to, investigation on insurance benefit for, 733

— Gear. See Gear

TEL all-electric runabout motor car, 393. See Correction, 496

Telcon. See Telegraph Construction & Maintenance Co., Ltd.

Telcothene HD polyethylene powder for dip coating (Telegraph Construction & Maintenance), 748

Telecommunications, by A. T. Starr (book), 61

Telecommunications, by A. T. Starr (book), 61

— Economics, by T. J. Morgan (review), 342

— Examination guide, elementary, by W. T. Perkins (book), 217

Perkins (book), 217

Lines and power systems, interference between, by H. R. J. Klewe (review), 745

Telefunken, radio telephone link by tropospheric scattering, between West Berlin and German Federal Republic, 711

Telegraph Construction & Maintenance Co., Ltd., British Insulated Callender's Cables Co.'s interest in, 16; polythene insulated and sheathed electric cable for Southend Pier, 374; Telcothene HD polyethylene powder for dip coating, 748

Telegraph, microwave, mobile system for US Air Force bases in UK, 456

Telegraphy, wireless. See Ongar Radio Station

— See also Valves; Radar; Radio; Television

Telemetry, airborne, equipment for (Arm-

Telemetry, airborne, equipment for (Armstrong-Whitworth), 113

— Range for X-15 upper atmosphere research aircraft, 362

Telephone dialling codes for London, changes in, 564

— Equipment, transistors for, 742 — Internal systems (Siemens Edison Swan), Kiosk, "packing experiments" in, 397

 Message recorder, Ansafone (Southern Instruments, Ltd.), 37 Microwave, mobile system for US Air Force bases in UK, 456

New, statistics, 609
Post Office, No. 706, 512
— Office, 700-Type, by F. E. Williams and F. C. Carter, 512

Radio, on French Railways express trains,

- Link by tropospheric scattering between West Berlin and German Federal Republic,

to Russia, reversed charges for, 364
Subscriber set, automatic sensitivity control for, by F. E. Williams and F. A. Wilson, 512

Telephone subscriber, trunk dialling, by D. A. Barron, 160

of Zanzibar, Plain Words on, 482

- Waiting list, discussion in Parliament on,

Teleprinter, electronic, high-speed (Burroughs Adding Machines), 5

Adding Machines), 5

Telescope, astronomical, Orion "do it yourself" kit (W. Ottway & Co., Ltd.), 416

Isaac Newton, for Royal Observatory, parallax work with, 341

- Lunar observations with, 333

- Radio, "criss-cross," 121

- Jodrell Bank, discussion in Parliament on, 272

on, 272

— at Radiophysics Laboratory (Sydney),
121

Television Advisory Committee, recommendations for television bands 4 and 5, 512
Bands 4 and 5, Television Advisory Committee recommendations for, 512
Closed-circuit, for PLUTO reactor, 491
Circuit, for slabbing mill (Steel Co. of Wales) 691

Circuit, water-level indicator (Hopkinsons), 166

Sons), 166

— Eurovision link, 5th anniversary and organisation of, 756

— Industrial (trade publication), 802

— (Epsylon), 774

— in lunar probes, 333

— Manufacturing industry, position and prospects of 146

pects of, 146

— Programmes from Dover, ITA contract with Southern Television Ltd. for, 480

Television in the Public Service (BBC booklet).

457
Television, rent or buy?, 320
— Sets, sales position of, 145, 146
— Spotlight on, BBC booklet, 128
— in steel industry (BISRA), 191
— Tube. See Cathode-ray tube
— Tuner amplifier valve. PCC89 (Brimar), 583
Temperature measurement display on cathode ray tube for up to 24 thermocouples, 102
— in marine boiler research, 619
— with Tempilstiks, 651-652
— See also Thermocouple; Thermometer
— Multi-switch indicator for checking (Ad.

— See also Thermocouple: Thermometer
 — Multi-switch indicator for checking (Ad. Auriema, Inc.), 455
 Tempering. See Heat treatment
 Tempilstiks, temperature measurement with, 651-652
 Temple Mills marshalling yard, 738
 Ten Steps into Space, note on, 155
 Tenders, cost of, by Sir K. Hague, 659
 Tennerse Volley Authority contract to C. A.

Tennessee Valley Authority, contract to C. A. Parsons & Co. for turbo-generator, 199; overseas tenders for heavy engineering equipment, 328; purchase of turbo-generator from C. A. Parsons, 456

generator from C. A. Parsons, 456

Tennet Engineering, Foamsil foamed glas environmental test chamber for McDonn Aircraft Corp., 379

Tension gauge for ropes, Schmidt (Addison Electric), 455

— Relief, micro-resonance vibrator for (Automat Machine Sales), 453

— Surface. See Surface tension

Tensioner, HSD, for strapping bands (Packers Supply Co., Ltd.), 293

Tent, Marechal, 224

— Plastics, house building under, 272

Terrestrial magnetism. See Magnetism

Terrington, Dr. J. S., on buildings and structures in iron and steel industry, 221

Tersons Ltd., Temple Mills marshalling yard,

Tersons Ltd., Temple Mills marshalling yard, 738

738
Terylene and glass fibre filters (ICI), 620
— Patents, extension of, 391
— Rubber conveyor belting for Russian ore field (BTR Industries), 284
Test. See under specific types of test and materials and items tested

Beds for Rolls-Royce oil engines 811

Haterians and tensits tested

Beds for Rolls-Royce oil engines, 811

Twin cell, for Proteus turbo-prop aero
engines at Nantgarw (BOAC), 95

Chamber, environmental, at McDonnel
Aircraft Corp., Foamsil foamed glass for,
379

— Plant for Rolls-Royce Dart turboprop aircraft engines for BEA, 223
— Rigs (trade publication), 586
— Blade-vibration, dynamically isolated, by Dr. W. Carnegie, 54
— for head loss of fittings, NEL, 749
— for pump models, NEL, 763
— for vibration of anti-vibration mountings (Fairey), 373
— Set, hydraulic portable (Charles S. Madan), 455
Testing, efficiency of turbinological residues for turbing the set of turbing to the set of turbing to the set of turbinological residues for turbinological residues f

Testing, efficiency, of turbine reduction gear units at full load, 306

— Electrical (trade publication), 802

— Machine, universal, 500 tons, Amsler, for

Secretaria de Comunicaciones y Obras Publicas, 433 See also under specific types of testing

machine - Materials, American Society for. See American — See also *Test*Tetrode, field effect (Bell Telephone Labora-

tories), 680

Texas Instruments Ltd., price reduction in semi-conductors, 126; semiconductor application reports, 475; factory at Dallas (Texas) (trade publication), 586; silicon rectifiers (trade publication), 650

Textile Committee of ILO, report of 6th session

Textile Committee of 120, ...
of, 77

Industry, automation in, 77

— Engineering attainment in, 77

— Position and prospects of, discussion in Parliament on, 201

— Technological progress in, 77

— Machinery, design trends of, 77

— Exports, 76

Exports, 76 Index, 1958 (review), 310 Industry, discussion in Parliament on,

— — Industry, position and prospects of, 76 Thames Bridge, Maidenhead, 540 Theatre, lecture, for Royal Aeronautical Society, 671

Thermal conductivity of zirconium-uranium-hydrogen alloy, 138

Insulation Act, requirements of, 525

Texturing surface finish for granite (Union Carbide), 284

Turbines vol. 1, thermodynamic-fluid-dynamic calculation, by W. Traupel (review), 60

Thermatool high-frequency welding head for aluminium tube (New Rochelle Tool Corp.), 446

Thermionic valve. See Valve

Corp.), 446
Thermionic valve. See Valve
Thermocouple measurements display on cathode ray tube, 102
— Mineral insulated (British Insulated Callenders Cables), 717
Thermodynamics, engineering; work and heat transfer, by G. F. C. Rogers and Y. R. Mayhew (review), 442
— Fluid-dynamic calculation, by W. Traupel

- Fluid-dynamic calculation, by W. Traupel (review), 60
- of fluid flow, by N. A. Hall (review), 585
- of heat power, by V. M. Faires (review), 217
- and heat transfer, by D. A. Mooney (review), 442

Hives Chair of, Nottingham University, 48
Mechanical engineering, by D. A. Mooney (review), 185
Technical, introduction to, by E. Schmidt (review), 60

(review), 60
Thermoelectric device, caesium gas and enriched uranium thermocouple for, 492
— Liquid caesium in, 394
— Generator. See Generator
— Materials for direct conversion of fission heat to electricity, 13, 575
Thermometer, high-temperature, Rototherm, for diesel engines (British Rototherm Co.), 486

Thermonuclear criteria, summary of, 574

— Piles, theory of, by J. Maurin (book), 411

— Processes, Convention on, BNEC, 574, 598, 606; American controlled thermonuclear research, by Dr. Van Atta, 702; Russian controlled thermonuclear research, by Dr. I. N. Golovin, 702

— See also Nuclear fusion; Pinch; Plasma; Sceptre; Torus; ZETA

Thermotank Ltd., amalgamation proposal with J. & E. Hall Ltd., 764

Thermotex glueing machine for cardboard cartons (Lerner Machine Co.), 685

Thomas, E. Lloyd, on technical writing, 573

Thomas, E. Lloyd, on technical writing, 573
Thomas, G. & R., Ltd., metals and alloys for foundries, 722
Thomas, Sir M., on Monsanto Chemicals Ltd.,
456 Thomas, Petty Officer M. D., Queen's Com-

Thomas, Petty Officer M. D., Queen's Commendation, 605
Thomas, Richard, & Baldwins, Ltd., new strip mill project, 103, 354
Thompson, A. G., work measurement and productivity comparison in heavy arc welded construction, 242
Thompson, J. Langham, Ltd., transistorised accelerometer, 69
Thompson, John, Ltd., work at Berkeley atomic power station, 206; fuel loading-unloading machinery for Berkeley atomic power station, 490; technical library, 519; AWRE tandem accelerator, 771
Thompson, John, Ordnance Co., ball bearings for Berkeley reactor servicing machine, 484

from Berkeley reactor servicing machine, 484
Thompson, M. S., on accelerated curing tests on concrete, 759
Thompson, P. D., on buildings and structures in iron and steel industry, 221
Thompson, W. B., on gaseous plasma, 465
Thor Able I lunar probe, summary of details of, 615

Thorex plant for processing irradiated uraning to 174 Thoria. See Heavy water-thoria-urania
Thorium as atomic fuel, 109
— Compounds in bismuth as fertile material,
315

Deposits in New Zealand, 80

— Deposits in New Zealand, 80
— Irradiated, processing of, 174
— Irradiation of, 109
— Liquid, as atomic fuel, 314
— Ore, processing of, 173
Thornycroft, Ltd., RKRN6 marine diesel engines, 697
Threads, and heads: buyers' guide, 1959

engines, 697
Threads and heads: buyers' guide, 1959
(review), 649
— Screw. See Screw
Threading machines, Maiden type A (Landis Machine-Maiden, Ltd.), 809
— and screwing machine, Maiden 2C/ST
(Landis Machine-Maiden), 633
Throttle valve for gasifier-turbine plant, 49
Thrust units, electromechanical, Autoram
(George Angus & Co.), 665
Thwaites Engineering Co., Ltd., Nimbus T3
diesel dumper truck, 730
Thwaites, R. M., on economics of ships in port.

Thwaites, R. M., on economics of ships in port, Thyssen-Hütte Aktiengesellschaft, August, annual report, 732
Ticket machines, London Transport, 266
Tie, Engineers' Guild, 573

Tilbury flyover, construction of, 670
Tile, Blue Hawk, for CIBA (ARL), Ltd., new building, 707

— Flooring, British Standard on, 611

Roofing, concrete, increased use of, 192 Vitreous-enamelled aluminium, 587

Tilghmans, Ltd., shot blasting equipment, 722
Timber beams, Aerolite glued, Cawood
Wharton, 707

— Conoid roof for Oxford Road railway
station, Manchester, 408

— as construction material, 525

— Construction, promotion of 707

as construction material, 525
Construction, promotion of, 707
Development Association, timber roof structures, by E. Levin and P. O. Reece (report), 579; annual report, 707; bursary in timber engineering, 707
Drying shed, prefabricated, 739
Engineering, bursary in, 707
Roof construction, international working party on, 495

party on, 495

— Construction, Tecon products for, 543 — Structures, research development and design of, by E. Levin and P. O. Reece (report), 579

Time measurement. Part 1: historical review, by F. A. B. Ward (book), 29

— Recorder for components (Blick Time Recorders, Ltd.), 324

— Standard, atomic, Dr. L. Essen's work on, 397

Timer, miniature (trade publication), 650

 Process (trade publication), 746
 Timing belt, Powergrip, for One-20 diesel dumper, 589 Timken Roller Bearing Co., offer for control of British Timken, 536

Tin, price of, 8
Tinker & Young, Ltd., timber structure for Oxford Road (Manchester) railway

station, 408

station, 408
Tinned food. See Canned food
Tinplate in coils at Velindre Works of Steel Co.
of Wales, 478
Tipper and haulage chassis, Albion Reiver
(Leyland Motors), 634
Titanium (trade publication), 746
— Carbide, oxidation of, by W. Watt, 91
— Development of (supplement), 518
— in Iroquois turbojet engine, 26

in Iroquois turbojet engine, 26 — Position and prospects for, 8
— Vacuum melting, 626

Titles of Dissertations, Cambridge University,
649

Tod, W. & J., Ltd., glass fibre casings for Bedford diesel industrial units, 505 Tohoku University, activities of Institute of High Speed Mechanics, 93

Tolmon, F. R., on straightness of cylindrical components, 124

Tom Jay tug with Hydropulsion unit, 655

Tongs, lifting, for close stacking of barrels and cases (Walter Somers), 808 Tonks, E., & Sons, Ltd., acquisition by Yale and Towne Manufacturing Co., 488

Tools, carbide, turning alloy steels with, PERA report on, 319 - Cast, by Z. Eminger and V. Koselev (book), 475

Ceramic, turning alloy steels with, PERA report on, 319

- Changing, automatic, 524
- for cleaning small parts (Martindale Electric Co., Ltd.), 421
- Cutting, effect on chip formation, 444
- Extractor, for gland packings, free offer of (Crane Packing), 312
- Fixing, cartridge-operated (F. H. Bourner) - Fixing, cartridge-operated (F. H. Bourner & Co.), 327

Holders, boring, Eclipse, for English pattern lathes (James Neill & Co.), 696

for machining cast iron pipe flanges (Kitchen & Wade, Ltd.), 295 Plastics, ready-mixed compositions for (Kenilworth Manufacturing Co.), 588
 Pneumatic (trade publications), 93

Pneumatic (trade publications), 93
Positioning machine, automatic electronically-controlled, Autoplot (Mullard), 5
Press, manufacture of (David Brown), 785
Steel. See Steel
Tooling (trade publication), 586
Set, lathe, "Impero Unificatore" (A. A. Jones & Shipman, Ltd.), 230
Toolmaker's measuring microscope (Degenhardt & Co.), 420
Torch, plasma arc, for spray forming of high-

Torch, plasma arc, for spray forming of high-temperature materials, 652 Toroidal pinch. See *Pinch* Toronto, engineering education at, 1851-1919,

by C. R. Young (book), 29 — Underground trains, axle cases for, 786 Torque converter compared with hydrostatic drive, 654

- Coupling compared with hydrostatic drive, 654

drive, 654
Twin Disc, for diesel-hydraulic locomotive, 51
Meter. See Dynamometer
Motor (Woden Transformer Co. and T.S. Precision Engineering), 421
Test on turbine reduction gear unit, 306

- Transfer coupling for marine drive (Metalastik), 434 Torsion box, wing, on Vanguard airliner, 15

— Shafts in turbine reduction gear unit, static

torsional test on, 306 — Theory of, by C. Weber and W. Gunther (review), 282 Torsional test on torsion shafts in turbine

reduction gear unit, 306 Vibration damper and its vector diagram, by G. S. Pidd, 784
 Torus, designs of, 606

Liner systems, 606 Touchbutton Pyeway car radio, 104 Tough Bros., Ltd., Sub-Aqua-Jet underwater tug, 87 "Tour of the Works," Firth-Brown film, 587

Tourret, R., on miniature oil velocity indicator, Tow Line pipeline irrigation system (Wright Rain), 705

Towels, paper (Bowater-Scott Corp.), 453
Tower, cooling. See Cooling
Tower Cranes, Ltd., tower cranes, 226

Leaning, of Pisa, electropetrification, 73 — Transmission, damage to crops in erection

— Winder, Koepe, at Rufford Colliery, 338 Towing tugs, aircraft, hydrostatic drive for, 655

Towler Bros. (Patents), Ltd., batch production of hydraulic pumps, 625
Town and Country Planning Association, 1959 annual report, 566 - Planning and economic planning, 566

— Planning programme, Yale University, 573 Townsend, H., on business enterprise (review), Toyopet motor car, sales in US, 328
Traction Electric, Ltd., all-electric runabout
motor car, 393. See Correction, 496
Tractor, Albion-Cuthbertson Water Buffalo,

for swamp lands (Albion Motors), 358

— Battery-operated, for factory use (Brush Electrical), 453

— Standard plea for, 458

— Crawler, hydrostatic drive for, 655

— "Life-long" lubrication of track group, Allis-Chalmers, 479

with should and 2 tiped ripper (Mackey)

- with shovel and 3-tined ripper (Mackay),

Tractor, David Brown - 950, 406 — Economic use of, 227

Exports of, 111-112 Hydrostatic drive for, 654 New developments in, 112 Power in farming, 227

Programme-controlled, 112, 114 Statistics, 227

- Vigor, and earth-moving equipment, for British Army (Vickers-Armstrongs (Trac-tors), Ltd.), 319 - Water Buffalo, for swamp lands (Albion

Motors), 358 Trade agreement with East Germany, 251

— with Russia, 755

— Associations, abbreviations of, 501

Australian, policy review for, 251
— with South East Asia, increase in, 322
and the bamboo curtain, by Earl of Veru-

lam, 788 Board of. See Board

Board of. See Board
with China, potential of, by Earl of Verulam, 788
Directory, 1959, 310
with East Germany, 596
Exhibition. See Exhibition
Foreign, in Western Germany, 290
International, restrictive practices in, discussion in Parliament on, 272
Marks. See also Patents, designs and trade - Marks. See also Patents, designs and trade

marks Mission, British, to Russia, 659
— to Ghana, 312 to Russia, discussion in Parliament on,

— Scandinavian, in London, 756
— with Russia, discussion in Parliament on, 363, 493, 571

— Factors affecting, by S. R. Anfimov, 755

— Five-year agreement, 755

— Recent contracts, 757

— with Scandinavia, 756

and Technical Press, Council of, business and specialised publications of Great Britain (booklet), 217

- Unions' activities in 1958, 9 Advisory research staffs of, 353 Attitude to disputes, 457 Demarcation disputes and strikes, 605 Effects of changes in society and indus-

try on, 353

— Membership and financial statistics, 323

— Ownership of hat company, 207

— US, growth of, 11

— US, lawlessness in, 331

Trade Union Congress, approach to alleged balloting irregularities in Electrical Trades Union, 11; conference on human engineering, 693

See also under names of specific unions Unionism and modern industry, by Lord Citrine, 11 Traders' Road Transport Association, scheme

on road parking, 323

Tradition, functional, in early industrial buildings, by J. M. Richards (review), 777

Traffic barrier (trade publication), 216

— Electrically operated (Bolton Gate), 263
— Congestion problems, exhibition on, 45
— Engineering course at Yale University, 672
— Diploma, 397

— Diploma, 397

— Fellowship, 643

— Programme, Yale University, 573

— Staffing at Ministry of Transport, 272

— London, by H. D. Morgan, 227

— 40 m.p.h. speed limit regulations, 297

Trailers, brakes for, working party on, 544

— Helicar, for Kolibrie helicopter, 88

— Limitations, working party on, 544

— Low load, Wrigley (Wessex Industries), 634

Train. See Railway train

Train. See Railway train
Trainer-Tester charts, 511
Training at AEI, cinema film on, 756
— Air transport pilots, 458
— British Employers' Confederation report on,

Centre of Stewarts and Lloyds, Ltd. at Bilston, 605

— Commonwealth engineers, scheme for, 669
— Council, Industrial. See *Industrial*— Durgapur steelworks staff in UK, 537
— in ergonomics, facilities for, 365

Forging industry, Sheffield, BISF scheme, of inspectors, conference on, 125
Maintenance, Rolls-Royce, 527
Salesmen, by H. C. White, 511

 School, locomotive drivers', Stewarts Lane, 776 for Skill, Carr committee report, 635

in UK under ILO projects, 699
Within Industry for Supervisors at KLG
Sparking Plugs, Ltd., 382
See also Education

Trajectories, lunar, calculations relating to, 332 Trans-Canada highway progress, 776
Transceiver in Consort radar equipment
(Marconi), 471

Transducer, barium titanate, for ultrasonic flaw detector, 570 Data processing, for aircraft industry (CEC), 71 Electromagnetic (Woden Transformer Co.

and T.S. Precision Engineering, Ltd.), 421—Lead zirconate, for ultrasonic flaw detector, Pressure resistance (trade publication), 618

Variable inductance, Lancelec, in escape from submerged aircraft tests, 278 Transfer function analyses, apparatus for (Servomex), 70

Analyser for testing servo-mechanisms and control gear (Servo Consultants), 665 Line, 524 Machine, 524

Transformers, auxiliary, for Bradwell atomic power station, 491

— Bank for Swedish State Power Board, 375

— Bushings, Dialam (Permali), 557

— Control, auto-, of induction motor, 590

- Lighting, flameproof, to NCB specifications (Belmos), 357

Miniature, nylon coil bobbins for (George Goodman, Ltd.), 653 Production statistics (Ferranti), 231; activities and progress of, 231

Transformers, for toroidal discharge systems,

— Welding (English Electric Co., Ltd.), 4

Transformers (Watford), Ltd., Jansen type on-load tap changer, 326

Transient Reactor Test Facility Critical (TREAT), criticality achieved, 366

Transistor, applications of, 742

— Convention of, IEE, 741

— Development progress of 741

Development progress of, 741
Exhibits at British Electronic Component

Exhibits at British Electronic Component Show, 583
for Home Constructors, Ediswan-Mazda XA103 and XA104, 96
Junction, and its applications, by E. Wolfendale (review), 801
Manufacture, 743
Packaged (Mullard), 583
Tester (Siemens Edison Swan, Ltd.), 761
Transistorised accelerometer (J. Langham Thompson), 69
Data recording and analysing system for

Data recording and analysing system for neutron spectrometry (EMI Electronics),

 Digital computer, PCTC (Ferranti), 87
 Units, plug-in (Venner Electronics), 102
 Transit shed for Royal Victoria Dock, 94
 Translation, language, by computers, by A. D. Booth, L. Brandwood, and J. P. Cleave (review) 184 (review),184

of Russian journal Avtomaticheskaya Svarka
(Automatic Welding), by BWRA, 160
— Scientific literature, note on, 29 Service, British Iron and Steel Industry, 283

Transmatic electronic controller for air conditioning systems, design development of (Teddington), 522

Transmission belting, nylon, Roko, 504

— Length in pretensioned concrete, by G. D.

Base (book), 93 Lines, circuit analysis, by J. L. Stewar (book), 184

and phase shift, apparatus for measurement of (Servomex), 70

Towers, damage to crops in erection of, 731
Unit for diesel locomotives and railcars, Mekydro (J. Stone), 134
See also Drive; Power
Transmitter, radio, remote-controlled, for Ongar Radio Station, 307
Receiver, Type 14, for Kelvin Hughes unit system for marine radar, 262
Transport, air, See also Air: Aircraft

Transport, air. See also Air;
Aviation Aircraft; Aviation

Transport and Civil Aviation, Ministry of, tests on motor vehicles, 104; London Traffic (40 m.p.h. Speed Limit) (No. 1) Regulations, 1959, 297; investigation of altimeter readings, 298; traffic engineering staffing at, 272; policy for inland water ways, 290; modification of presentation of sensitive altimeters, 403

— and General Workers' Union, dockers' section claim for pension and sickness.

section claim for pension and sickness

benefit scheme, 48

Road. See Motor; Road

Railway. See Railway

Sea. See Ship; Shipping

System, Cargon, 787

Transporter, hydraulic, Marchandre, Mar

Transporter, hydraulic, Mono-Rail (Road Machines (Drayton), Ltd.), 390

— Tractor, Water buffalo, for swamp lands

(Albion Motors), 358

— 30 ton (Douglas Equipment), 200

Traupel, W., thermal turbines, vol. 1 (review), 60

Travel abroad for young people, 207
Travelling wave systems (trade publication), 650
Travers, Dr. M. W., work for Indian Institute
of Science, 130
Trawler, Falstaff, diesel-electric, 375
Trawling unit (MacGregor International and
Robertsons (Fleetwood)), 781
Trawsfynydd atomic power station, contract
for Atomic Power Constructions, Ltd., 795
Trays and bins, plastics (trade publication), 474
TREAT. See Transient Reactor Test Facility
Trees planted in clay, ground movement near,
611

Treille, P., atomic power plants (book), 502 Trend Industrial Equipment, Ltd., Bosch bolt driver, 762 Trent, River, gas liquor disposal in Stoke area,

Tretol, Ltd., Tretoplast pvc spray coating, 578 Tretoplast coating for ceiling of Heinz factory at Kitt Green, 578

Triax thermonuclear research experiment, 702 Tributyl phosphate for processing uranium, 173, 174

TRIGA reactor for training and research, 461
Trimarian yacht (P. Webster, Ltd.), 86
Trisuli hydroelectric power project, India financing of, 803
Tritium, cost of, 499

— as radioactive light source, 497
Tritton, J. S., on consulting engineer, 489
Triumph Herald motor car, by G. Wilkins, 580 Trochotron high-speed decimal stepping tube (Mullards), 653 Trolley bus, disposal of, by London Transport, 264

- Driverless, Robotug system (EMI), 589
Troop carrier aircraft, Hercules C-130,
boundary layer control for (Lockheed
Aircraft Corp.), 505
Tropical Products Institute, research station of

**DSIR**, 259 Tropospheric scattering radio telephone link between West Berlin and German Federal Republic, 711 Truck crane, MEI (Thomas Smith & Sons), 728

- Driverless, at BR Newton Abbot goods shed, 589

shed, 589

— Dumper, diesel, Nimbus T3 (Thwaites Engineering), 730

— Diesel, One-20, with Powergrip timing belt, 589

— Muir-Hill 10B (E. Boydell & Co.), 454

— Fork, Piccolift, for confined spaces (G. Hunter (London), Ltd.), 760

— Forkalift hydrostatic drive for 655

Fork-lift, hydrostatic drive for, 655
 Hand, "Drumtruck" (Conveyancer Fork Trucks), 453

"Handtruck" (Conveyancer Fork Trucks), 453

Truck, hand, "Skidtruck" (Conveyancer Fork Trucks), 453

Fork Trucks), 453
Lift, Flattie (Eccles), 728
Mounted crane (R. H. Neal & Co.), 761
Platform, Flagship (Angel Truck Co.), 762
Railway. See Wagon
"Reach", battery-operated (Conveyancer Fork Trucks, Ltd.), 453
Wheel, "life-long" lubrication of, 479
See also Motor vehicles

Truckenbrodt, E., aircraft aerodynamics. Vol.
I. Part I (book), 802

Truscon Travelling Scholarship award to
D. F. Smith and P. Whiteley, 804

Truss, aseismic reinforcing, for Calder Hall

type reactor, 79
Trusts in Europe, 355, 727
Truvu television tubes (John Brennan), 264
T.S. Precision Engineering, Ltd., wire contact relay, patchboard, and torque motor, 421
Tschaika motor car, 740
TSP 2 testical support and reconnaissance

TSR 2 tactical support and reconnaissance aircraft, 39, 668. See also 2
TU104 airliner, 700

— Noise of, at London Airport, 458
TU114 Rossiya airliner, 700
Tube, aluminium, from roll-formed strip, high-frequency welding of (Elm Engineering), 446

 for atomic power plant (Talbot Stead), 491
 Bending, angle of, calculator for (Chamberlain Industries), 324 Beryllium, extrusion of (Chesterfield Tube).

Carbon, metal-clad, Metica, 491 Cathode-ray. See Cathode-ray tube Copper, plastics-covered, Kuterlex, 556

- Copper, plastics-covered, Kuteries, 356
- Coupling, KeelaTite (Industrial Hydraulics, Ltd.), 487
- Gilled (Accles and Pollock), 504
- Glass, cutter (Electrothermal Engineering, Ltd.), 730

Graphite, metal-clad, Metica, 491, 555

 Heat exchanger, wire wound (Clayton Dewandre), 504 Tube Investments, Ltd, bid for control of British Aluminium, Ltd., 3; bid for take-over of British Aluminium Co., Ltd., 39. See also *Plain Words*, 34; control of British Aluminium Co., 71; joint company with

Raleigh Industries for cycle manufacture in Ireland, 595

Mild steel, Besco plate bending rollers for (F. J. Edwards), 45 +

in new metals (Accles and Pollock), 504 Profile cutter, Alyn (Saturn Industrial Gases), 534
Radio, international encyclopaedia, 1958-

1959, by B. B. Babani (review), 310
Railway. See Underground railway; London
Transport Executive

Stainless steel (trade publication), 377
Stepping, trochotron high-speed decimal (Mullards), 653 See also Pipe

Tubewrights, transit shed for Royal Victoria Tubular steel, welded, construction for dock transit shed, 94

- Steelwork for Arcon buildings fabricated in Lagos, 543

Lagos, 343
Tuflite hair packing material (Xetal Products Ltd.), 780
Tufnol, brands of, 556
Tufnol, Ltd., Tufnol brands, 556
Tug, Tom Jay, with Hydropulsion unit, 655
— Underwater, Sub-Aqua-Jet (Tough Bros.),

Tungsten based shank material, Mallory No-Chat (Johnson Matthey & Co., Ltd.), 620

Chat (Johnson Matthey & Cc. Ltd.), 620

— Spray-forming with plasma torch, 652

Tunnel, Blackwell, new North Approach and road improvements, to, 803

— Channel. See Channel Tunnel

— Dartford-Purfleet, progress on, 579

— Mont Blanc road, 162

— for Notting Hill Gate underground station,

Tunnel Portland Cement Co., Leaner mixes for

Masonry cement, 804
Railway, Potters Bar, completion of, 707
Road, Mont Blanc, through Alps, 494 Mont Blanc, progress on, 739

— Mont Blanc, progress on, 759

— St. Bernard road, 162

— Tyne, financing of, 298

— Wind. See Wind tunnel

Turbine, air, centripetal, damage by welding slag to, 127

— Closed-cycle pulverised-coal-fired (Escher Wyss), 63

Blades frequency of effect of disc class

Blades, frequency of, effect of disc elasticity, by J. P. Ellington and Dr. H. McCallion, 645. See Correction, 800—for Iroquois turbojet aircraft engine (Orenda), 26

Casings for gasifier-turbine plant, 49 Design for aircraft engines, by N. C. Breddy (book), 746 Disc elasticity, effect on blade frequency, by J. P. Ellington and Dr. H. McCallion, 645

Gas, for aircraft, by A. W. Judge (review), 343 - Alternator. See Alternator Application of heat exchangers to, by

W. Hryniszak (review), 376

W. Hryniszak (review), 376

— Atomic propulsion plant (General Dynamics Corp.), 735

— Coal-fired, Locomotive Development Committee, 441

— Free-piston, for ore carrier Morar (Rankin & Blackmore, Ltd.), 349

with gas-cooled reactor, higher thermal efficiency for, 547

- for gasifier-turbine plant as compressor drive (Brush), 49
- Marine Proteus, for patrol boat *Brave* Borderer, 52

Motor car, Ford 704, scheduled for testing, 772 for motor cars and lorries, "704" (Ford), 676

for motor cars, position and prospects of, - Plus steam, for destroyers and frigates,

- Proteus, for alternator set, 569

Turbine, gas, Ruston & Hornsby, 89
—— Solar range manufacture by Perkins, 764

TA type for Canadian Industries, Ltd.,

312
TA type, for mobile power station for Russia (Ruston & Hornsby), 805
See also Aircraft engine
Turbine Gears, Ltd., "Velomesh" reduction gears (trade publication), 28
Hydraulic: design and equipment, by M. Nechleba (review), 617
Pump. See Pump, centrifugal
Reduction gear units, full load efficiency testing, 306
Steam, performance and economics, by

- Steam, performance and economics, by R. L. Bartlett, J. E. Mulder, and R. C. Slellon (review), 745

 Plus gas, for destroyers and frigates, 434
 Reheat, for High Marnham power station (English Electric), 594 Theory and practice, by W. J. Kearton (review), 745

— See also Turbo-generator

Thermal, vol. I, thermodynamic-fluid-dynamic calculation, by W. Traupel

dynamic calculation, by W. Traupel (review), 60

— See also Aircraft engines

Turbo-alternator, 200 MW, for High Marnham power station (English Electric), 594

— Stability limits of, operation tests on, 254

— Blower for Stephen-Sulzer 15,400 b.h.p. diesel engine, 688

— Sulzer, for diesel engine for tanker British Fulmar (Alexander Stephen), 134

— Charged diesel engine. See Engine, diesel

British Fulmar (Alexander Stephen), 134

— Charged diesel engine. See Engine, diesel

— Generator, hydrogen peroxide, for X-15
upper atmosphere research aircraft
(General Electric Co. (US)), 361

— See also Alternator, gas-turbine
Turnall plastics washer and protective cap for
asbestos cement sheets, 495
Turner, F. S. P., on Victoria Tube project, 193.
See Letter, 227
Turners Asbestos Cement Co., Ltd., Everite
asbestos sheeting (trade publication), 185.

asbestos sheeting (trade publication), 185; asbestos cement products, 452; Turnall plastics washer for asbestos cement sheets,

plastics washer for asbestos cement sheefs, 495; Turnall plastics protective cap, 495; fire protection of structures, (booklet), 804

Turning alloy steels with ceramic and carbide tools, PERA report on, 319

Tustin, A., and others, position control of massive objects (review), 713

Tuttle, D. F., Jr., on network synthesis (Vol. I) (review), 92

TWI. See Training Within Industry

Twiffay Coupling Ltd. disc. brokes for

TWI. See Training Within Industry
Twiflex Couplings, Ltd., disc brakes for
hydraulic or mechanical operation, 533 Twin Disc torque converter for diesel-hydraulic locomotive, 51
Twine Co., Ltd., ropes in polyethylene yarn,

Twinstik adhesive for name plates (Evode, Ltd.)

Twist drill. See Drill
Twistor shift register, five-advance (Bell Laboratories), 53
Twyman, F., obituary, 356
Tyler, R. D., review of Thermodynamics of fluid flow, by N. A. Hall, 585-6
Tyne shipbuilding industry, position and prospects of, 572
— Tunnel, financing of, 298
— Turboprop engine for Vanguard airliner, 14.
See Correction, 75

- Turboprop engine for Vanguard airliner, 14.

See Correction, 75

Typeface for electronic reading machines (EMI Electronics), 218

Typewriters, electric, at Business Efficiency Exhibition (Remington Rand), 698

- (IBM), 728

in the home, sales drive, Plain Words on, 662

Typing, teaching in schools, Plain Words on, 662

Tyre and road friction between by Dr. D.

Tyre and road, friction between, by Dr. D.
Tabor. See Letter, 631

- Rubber, electronic machinery used in production of, 352

U-BLADE for coal handling by tractor (Marshall Organisation), 643
UAM Group of Companies, fire proofing (trade publication), 216
Udex aromatic extraction unit for Stanlow refinery (Universal Oil Products), 620

refinery (Universal Oil Products), 620
Ultra Electric Ltd., history (brochure), 411
Ultrasonic crack detector for valve manifold blocks (Kelvin Hughes), 625

— Dish washing machine (Westinghouse), 812

— Flaw detection and inspection service bureau (Ultrasonoscope), 264

— Detector, Mark II (Ultrasonoscope Co.), 570

Test for laminations in gear wheel rims, 785
Ultrasonics Ltd., Minisonic liquid whistle
homogeniser, 781
Ultrasonoscope Co. (London), Ltd., technical
service bureau on ultrasonic flaw detection
and inspection, 264; Mark II ultrasonic
general-purpose flaw detector, 570
Undercarriages for F.27 Friendship passenger
aircraft (Dowty Equipment Ltd.), 505
Underdeveloped countries, steam power plant
for (Reader), 432

for (Reader), 432

- Subsidising public utilities in, by E. Black, 530 Underground locomotives (diesel and storage

battery) (book), 311 Pipework, Stilag insulating sections for, 579 Railway trains, Foronto, axle cases for, 786
 Railway. See also London Transport

Underpinning in Cononish Viaduct repairs, 642 (Westwood), 280
of walls for Notting Hill Gate underground station, 383

Unemployed, re-employment and resettle-ment of, European Economic Community report on, 483

Unemployment areas position and prospects

Unemployment, discussion in Parliament on, 35, 143

Effect of winter conditions on, 235 in engineering industry, position and prospects of, 9

in engineering industry in Scotland, 493
Fall in, statistics on, 489
Position and prospects of, 235
Statistics, 637, 733

See also Employment

ESCO. See United Nations Educational, Scientific and Cultural Organisation UNESCO.

Unger, F., on electrical machinery (review), 123 Unicam Instruments Ltd., fused silica in place of natural quartz for spectrophotometer prism, 59

Unicorn Head Visual Aids Ltd., "History of Radio" (film strip), 142

Union Carbide Corp. See ORR research

Union Carbide International Co., flame-plating Union Carbide International Co., flame-plating of aluminium alloy pulleys for wiredrawing machine, 59; Thermal-Texturing surface finish for granite, 284; graphite blocks for American aircraft industry, 683
Union Carbide Ltd., activities of Chemical Division, 24; petrochemicals plant at Fawley, 24: literature list, 617; metals and alloys for foundries, 722
Union Tank Car Co., geodesic dome for railway repair shop, 473
Trade. See Trade Union and under name of specific unions

Trade. See Trade specific unions Uniphase Cork cork-elastomer gasket material,

Units. International System of, by E. Schmidt, 695 United Africa Co., shortage of skilled man-power, 170

— Automobile Workers, agreement with

General Motors for advancement of semi-skilled operatives to skilled trades, 537 United Dairies, Stone-Vapor mobile steam

generator for, 134
Hatters', Caps and Millinery Workers'
International Union, majority shareholder

International Union, majority shareholder in hat company, 207
Kingdom Atomic Energy Authority, inventions available for industrial use, 46; Sir A. Hitchman full-time member, 141; radiation exposure experience, 236; appointments, 303; new appointments, 395; reorganisation of radioisotope service, 395; safety precautions, 397; revised structure of, 427; activities of Development and Engineering Group, 427; activities of Production Group, 427; provincial exhibitions on radioisotopes and atomic energy, 535; AGR reactor, Windscale, for ship propulsion, 639; see also under specific establishments and projects

United Kingdom Balance of Payments 1956 to 1958, White Paper, 531 United Kingdom dependencies. See Depen-

Treasury and Supply Delegation (in US), functions of, 535

Nations Educational, Scientific and Cultural Organisation, technical and vocational education in UK (bibliographical survey),

Establishment of Economic Commission for Africa, 98

- Future Growth of World Population (book), 331 States Air Force, Atlas intercontinental ballistic missiles (General Dynamics Corp.), 245; mobile microwave telephone and telegraph system of bases in UK, 456—Air Force Research and Development Centre, research on monkeys, 331

- Aircraft industry, graphite blocks for (Union Carbide), 683 - Apprentices, safeguarding interests of, 537

Army, modified APPR-1 reactor, 268

Army Signal Corps Research and Development Laboratory, high-speed electronic teleprinter, 5

tronic teleprinter, 5
— Atomic energy agreement with Euratom, 335, 567, 789
— Atomic Energy Commission, joint research board with Euratom, 13; new reactor concepts, 13; modular atomic power plant proposals, 13; study of heavy-water moderated reactors, 47; thermoelectric generator for direct conversion of heat to electrical energy using polonium 210, 98, 110; atomic superheater, 267; design study of heavy-water heater, 267; design study of heavy-water moderated reactor, 268; fluid-feed reacmoderated reactor, 268; fluid-feed reactors, 268; design studies on boiling-water, pressurised-water, and organic cooled reactor concepts, 268; resignation of Dr. W. F. Libby, 269; 25th semi-annual report, 334; purchase of plutonium from UK, 394; basic charges for uranium 233 and plutonium, 394; interest in gamma process development irradiator, 395; organic moderated and cooled reactor project at Piqua, 425; meeting on test reactors, 460; New Nuclear Data 1957 Cumulation, 463; annual index to nuclear science abstracts, 745; see also under specific establishments and projects

— Atomic Industrial Forum, proceedings

- Atomic Industrial Forum, proceedings of conference on reactor fuel technology, 394; Atom Fair, preliminary notice, 395

- Atomic reactors in, 78

Atomic reactors, fast, 335

Atomic reactors, gas-cooled projects, 734 British sales in, 723 Chromium ore purchases from Russia,

Computers in use in, 419 Congress, inquiry on lawlessness in trade unions, 331 Consultant engineering in, EPA report (book), 123

Education progress in (publication), 733 - Electrical engineering industry, foreign competition, 369, 668

Euratom Co-operation Agreement, 336,

United States, exports to, discussion in Parliament on, 493

Exports to, position and prospects of, 692 Heavy-engineering equipment, Euro-pean tenders for, 328

Industrial design in (OEEC), 624 - Industry, protection in, discussion in Parliament on, 272

- Information Agency (Voice of America), diesel engine installation with evaporative cooling for (Mirrlees, Bickerton & Day),

 Investments in Europe, 791
 Investments overseas, development of, Investment overseas, incentive tax Bill,

Japanese motor car sales in, 328
Missile bases for Boeing Bomarc, 700
National Academy of Sciences, Mohole project to drill hole through Earth's crust, 567 National Bureau of Mines, detergent

foam for clearing gas wells, 747

National Bureau of Standards, standards

National Bureau of Standards, standards for uranium isotopes, 110; Journal of Research, 681; system design of digital computers at (review), 682; wind pressures in US (report), 739; handbook on Checking Prepackaged Commodities, 745;
National Museum, annual report, 343
Navy, satellite for cloud study, 259; atomic-propelled vessels, 545
Nuclear fusion research, 702
Protectionism in, 129, 272, 354, 456
Recession after-effects in, 726
Road accidents in, 368, 680
Road accidents statistics, 368

Road accidents statistics, 368 - Rocket flight and lunar conditions studies, 332

— Space project, summary of, 615
United States Steel Corp., annual report, 423
— 35 hour week claim in, 429 Trade with, discussion in Parliament on,

Trade unions, growth of, 11 Trade unions, lawlessness in, 331

United Kingdom Treasury and Supply Delegation in, functions of, 535

Vending machines in, 267

Wind pressures in (report), 739

See also Appring

See also America United Steel Cos., Ltd., Pegasus computer for floor beam section determination, 18; chairman's annual statement, 135; An-

nual report, 423 Univalent functions and conformal mapping, by J. A. Jenkins (book), 184

 Universal Asbestos Manufacturing Co., Ltd.,
 Magnum asbestos cement roof sheets, 683
 Boring machine. See Boring machine Universal Oil Products Co., Udex aromatic extraction unit for Stanlow refinery, 620

Universal Pattern & Precision Co., Ltd., writ claiming damages against shop stewards, Universe, theory of, by Prof. R. O. Kapp, 257, 270, 323-324

University foundations, claims for new, 105 Government grants for, 235 Population, plans for increase in, 105 Student statistics forecast, 235

See also under specific universities and under Education

Unloading of iron ore ships, by Dr. H. R. Mills, 593 of ore at Port of Rotterdam, 593 Upper atmosphere research aircraft, X-15

(North American Aviation), 361 Urania. See also *Heavy water-thoria-urania* URANIE reactor, 461 Uranium as atomic fuel, 106

Uranium as atomic fuel, 106

— Carbide as atomic fuel, 108

— Deposits in Mexico, 80

— in New Zealand, 80

— Dioxide as atomic fuel, 107, 140, 141

— Stainless-steel cermets fuel components for APPR reactor, 141

— Enriched, for French submarine, 675

— Processing of, 174

— for thermoelectric device, 492

for thermoelectric device, 492 - Fluoride, gaseous, fuel for atomic reactor

Handling of, 236 Hydrofluorination of, 173 Irradiated effects of, 107

Processing of, 173
Isotopes, diffusion plants for separation of, 202

Separation methods, 202 — — Standards, 110 — Liquid, as atomic fuel, 314 - Ore, processing of, 172

- Orice-iron cermets, fabrication and properties of, by W. J. Wright, R. B. Gibbon and J. Williams, 91

- Processing to metal, 172

Properties of, 174 Quotations for, 176

— Processing expansion at Springfields Works of UKAEA, 238
— by fluoride volatility process, 174
— by non-aqueous methods, 174

Production methods, 106 Properties of, 106, 107 Time-temperature-transformation diagram

World production and demand, 394
233, basic charge for (USAEC), 394

— in bismuth as atomic fuel, 315 — 235-plutonium exchange, UK and US, 703 Urethane foams, rigid (ICI), 556

Urquharts (1926) Ltd., MacFire automatic oil burner with natural draught, 38; printed circuit for control system for MacFire oil-firing unit, 592

Urwick Diebold Ltd., computer consultancy service, 695

Urwick, Orr & Partners, formation of Urwick Diebold Ltd., 695 User interviews, 528 USSR. See Russia USSR solid state physics (publication), 617

VACANCIES and other point defects in metals and alloys (book), 475
Vacuum forming machine, Daniels-Latymer (T. H. & J. Daniels Ltd.), 485
— Furnace. See Furnace
— High, drying and impregnation plant, Hyvacoilfil (Barlow-Whitney), 416
Vacuum Industrial Applications Ltd., agreement with General Electric Co., Ltd., in vacuum heating, 16; small general-purpose vacuum furnace, 532
— Melting of alloy steels, 626
— Furnace. See Furnace

Furnace. See Furnace
of titanium, 626
of zirconium, 626, 627

Pump. See Pump
 Technology, fourth national symposium on: transactions, by W. G. Matheson

(review), 553

— Glossary of terms used in (book), 650

Vajk, J. P., Westinghouse scholarship award,
397

Valatin, J. G., on electron lattice forces, 466 Valves (trade publication), 650

Actuator for remote control of (Limitorque Valve Controls Ltd.), 422
Air control, with neoprene diaphragm (Air Automation), 717

Automatic control (trade publication), 474 Body, pipeline, fabrication of (David Brown), 786

Butterfly, motor-operated, for atomic reactor gas duct (Blakeborough), 490

- Control stop, for steam lines, Bi-Seat (Sir W. H. Bailey & Co., Ltd.), 621

- Diaphragm, for atomic energy industry, 490

- Filling (trade publication), 443

- and fittings (trade publication), 502

- as flow controller, design of, 749

- Four-way, for hydraulic rame (Hutton &

Four-way, for hydraulic rams (Hutton & Mitton), 685

Hot/cold water-mixing, for showers (Meynell & Sons, Ltd.), 453

Manifold blocks, ultrasonic crack detector for (Kelvin Hughes), 625

Maxam control for presumatic hoists

Maxam control, for pneumatic hoists (Climax), 563

Microwave, electronics of, by W. J. Kleen (review), 184
Pipeline, electrical actuator for remote control of (trade publication), 554
Pressure reducing (Samuel Birkett), 761
Relief, hydraulic, design of, analogue method for (MERL), 151
— for power circuits, NEL study on, 685
Rotary, in hydraulic power steering system

Rotary, in hydraulic power steering system (General Motors Corp.), 708 Seats repair for diesel engines, 96 Sonic, for conveyor systems (Simon Engineering Group), 341

Spindles for hydraulic pumps (Towler Bros.), 625

and strainers (trade publication), 443
Thermionic, ceramic oscillator/amplifier
UL11 (Ferranti), 583
— with frame grid, 583
— Klystron development by Ferranti Ltd.

- Klystron manufacture by Raytheon Corp. under Ferranti licence, 135 - Klystron microwave KLS2 (Marconi Osram), 583

Television tuner amplifier, PCC89 (Brimar), 583
Throttle, for gasifier-turbine plant, 49

Vampire floor cleaning machine (British Vacuum Cleaner & Engineering Co., Ltd.), 256

Van. See Motor vehicle Van de Graaff particle accelerator at AWRE,

- Tandem accelerators at Atomic Energy of Canada Ltd., 771

Vandervell, G. A., retirement from international motor racing, 105

Vanguard airliner, design and construction, 14.

See Correction, 75

Preparation and testing for airline ser-

- Preparation and testing for airline service, 736 Progress on, 536, 668

- Satellite, summary of details of, 615
- I satellite, summary of details of, 615
- II satellite, summary of details of, 616
Vann, H. E., on shielding of marine atomic power plants, 545 Vanwall racing cars, G. A. Vandervell's work

vanwah racing cars, G. A. vanderven's work on, 105
Vapour blasting equipment, Hydrotron (Metachemical Processes, Ltd.), 284
— from organic materials, corrosion of metals by, by V. E. Rance and H. G. Coles (book), 343
Vattenfall. See Swedish State Power Board

Vauxhall Motors Ltd., air transport for de-livery of new cars, 57; production statis-tics, 103; success of Victor motor car in North America, 103; Victor Series 2 motor car, 265; Careless Talk Costs Jobs (booklet), 270; review of operating con-ditions, 488; design and development, 523

Vector diagram of viscous damper, by G. S. Pidd, 784 VeeBee valves and strainers (trade publication), 443

Vega diesel engine range (Davey, Paxman), 197 Velbex plastics for Stelvetite plastics coated steel, 210 Velocity, gas, calculation in flue-gas sampling, 287

Indicator, oil, miniature, by A. J. S. Baker, R. Tourret and J. T. Jones, 82

Vendepac Ltd., snack vending machines, 267 automatic canteens, 325 Vending machine, automatic, international exhibition and convention (London), 325

- Cigarette, 266 - Cigarette, 266
- Conveyor-belt, 266
- Development of, 266
- "Ever open shop," 2
- Gravity-feed, 266 266

— — for hot drinks, 267 — — for hot meals, 267

Vending machine for hot meals and drinks
(Automat Machine Sales), 453
— for ice cream, 267
— Industry in US, 267
— for refrigerated beverages (Coca-Cola Export Corp.), 453
— Revolving-drum, 266
— Sales developments in 369

Sales developments in, 369
 and slot machine, by S. Fitzmaurice-Kelly, 451

for soft drinks, 266, 267 for snacks, 267

— Tor snacks, 267

— Vendo, for milk, 266, 325

— Vendol "automatic shop," 266

— Vitrinomat "shop window," 266

Vendo milk-vending machine (Joseph Sankey & Son, Ltd.), 266, 325

Vendol "automatic shop" vending machine, 266

Venner Electronics Ltd., transistorised plug-in units, 102

Vent-Axia Ltd., Hall-Thermotank offer to shareholders of, 764

Ventilating equipment, natural and fan operated (Colt Ventilation Ltd.), 452

— and heating industry year book (review), 310

Ventilation in drawing offices, 560

— Equipment for transport (J. Stone), 134

— of iron and steel works buildings, 221

Ventilator, ridge-line (Greenwood's & Airvac), 665

Ventura diesel engine range (Davey, Paxman), 197

Venus, satellite sail for space project to, 441 Vereinigte Stahlwerke, deconcentration of, 699, Verschure of Amsterdam, Atlas 400 ton float-

ing crane, 595 Versil Ltd., glass fibre insulation (trade publication), 185

Vertomatic slag welding machine (Rockweld), 556

Verulam, Earl of, on trade and the bamboo curtain, 788
Viaduct, Cononish, repairs to, 642

— Runcorn, strengthening of, 671

— Wharncliffe, 540

— See also *Bridge* Vibratechniques, vibrator for shell concrete,

Vibration analyser, laboratory (Fairey), 373 Analysis, photo-transistor direct-reading displacement meter for (Fairey Air Surveys), 522 Blade, dynamically isolated test rig for, Dr. W. Carnegie, 54

- Effects on lamp, 85 - of hoppers, 447

Isolator unit for camera on jet aircraft, 372 Low frequency, mounting for prevention of,

Monitor (Giesler), 633
Palnuts for locking against (trade publication), 554

in stamp and press shop at Hawker Aircraft factory at Squires Gate, prevention

of, 212

Test rig for anti-vibration mountings (Fairey), 373

Torsional, viscous damper, and its vector diagram, by G. S. Pidd, 784

of turbine blades and discs, 645

Vibrators for bunkers, 447

Flameproof rotary (Blending Machine Co., Ltd.), 420

for hoppers, 447

for hoppers, 447 Internal, for hoppers (Sinex), 729 Micro-resonance, push-button type, for tension relief (Automat Machine Sales), 453 for shell concrete, Sinex Turbo, 738

— for shell concrete, Sinex Turbo, 738

Vickers-Armstrong (Aircraft) Ltd., Vanguard airliner, design and construction, 14. See Correction, 75; project TSR 2 reconnaissance aircraft, 39. See also 2; OR 339 strike aircraft project, 41; atomic energy work of, 462; EUREKA experiment for water-cooled reactor, 462-463; progress on Vanguard airliner, 536; earning power of Viscount airliner, 563; Vanguard turboprop airliner, 668; TSR2 tacticalstrike reconnaissance aircraft, 668; preparation and testing of Vanguard turboprop airliner for airline service, 736; Decca radar at Wisley airfield, 737

Vickers-Armstrongs (Engineers) Ltd., Russian

Vickers-Armstrongs (Engineers) Ltd., Russian order for complete chemical plant, 328; atomic submarine land-based project at Dounreay, 657

Vickers-Armstrongs Ltd., aluminium superstructure in liner *Oriana*, 505 Vickers-Armstrongs (Shipbuilders) Ltd., posi-

tion and prospects of, 668. See also Dreadnought atomic submarine
Vickers-Armstrongs (Tractors) Ltd., Vigor tractors and earth-moving equipment for British Army, 319
Vickers Australia Proprietary Ltd., activities of, 208

Vickers Group, exhibits at Atom Fair, 395;

annual report of activities, 668 Vickers Group Research Establishment, activi-

Vickers Hoskins, activities of, 208 Vickers Ltd., activities in Canada, 208; activities in Australia, 208; activities in India, 209; manufacturing subsidiaries in the Commonwealth, 208; position and prospects overseas, 209; association with ACC of India and Babcock & Wilcox Ltd., 231

Vickers Nuclear Engineering Ltd., model of nuclear tanker with AGR reactor, 547; reactor plant components at Engineering Exhibition, 547; advanced gas-cooled Exhibition, 547; advanced gas-cooled reactor in 65,000 ton tanker, 638; steam-cooled heavy-water moderated reactor for ship propulsion, 641, 793

Vickers Ruwolt, activities of, 208 Victor motor car exports to North America, 103 — Car, Series 2 (Vauxhall), 265 Victor Vixen diesel engine (Coventry Victor),

Victoria State Electricity Commission, Australia, power developments, 707

Victoria Tube project, preliminary planning of, by F. S. P. Turner, 193. See LETTER, 227

— Project, discussion in Parliament on, 201
— Prospects of, 193

Vierendeel girders, Reel overhead travelling crane with (British Industrial Engineering Co. (Staffs), Ltd.), 357

Viest, I. M., on composite construction in steel and concrete for bridges and buildings (book), 29

Vigor tractors and earth-moving equipment

Vigor tractors and earth-moving equipment for British Army (Vickers-Armstrongs (Tractors), Ltd.), 319
Vinca, recovery of victims of radiation accident, 302
Vines, F. D., on Muller-Hanna ore-handling installation, 593
Virtual, work, and, accordance to recovery

installation, 593
Virtual work and complementary energy applied to non-linear braced frameworks, by Prof. J. A. L. Matheson, 581
Visco Engineering Co., Ltd., cooling plant for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 783
Viscount airliner, earning power of, 563
Viscous damper and its vector diagram, by G. S. Pidd, 784
Visionhire television hire, 320
Visual Aids Information and Advisory Service.

Visual Aids Information and Advisory Service, films advisory service, 131
Vitreous Enamel Development Council, activities of, 587

— for torus of Zeta, 205 Enamelled aluminium, Judgelite, 587

Vitrinomat vending machine, 266 Voboma 38 and 64 for moisture-combatting plaster, 587

Voice of America. See United States Informa-tion Agency

- across the sea, by A. C. Clarke (review), 283 Vokes Genspring Ltd., constant support hangers, 491 Vokes Ltd., library, 519; Super-Vee air filter panel, 760

Volga motor car, 740
Volkswagen, proving ground, 143
Volta River hydroelectric and aluminium producing project, Ghana Government's work on, 543

ducing project, Ghana Government's work on, 543

— Project, road construction for (Parkinson Howard), 804

Voltage, common, for France, 195

— Level control for self-regulating alternator (W. H. Allen), 133

— Regulator (British Thomson-Houston), 326

— Automatic, type CVR 7, 254

Voltmeter, differential, d.c. and a.c. (Ad. Auriema, Incorp.), 390

— Digital (Solartron), 809

Volume, sample, dry, calculation in flue-gas sampling, 287

Voluntary work for industry, 321

Vosper, Ltd., Brave Borderer patrol boat, 52

Vulcan Boiler & General Insurance Co., Vulcan (publication), 649

Vulcan, journal of Vulcan Boiler & General Insurance Co., 649

Vulcanising, wire, high-pressure unit, at elastomers research laboratory of Du Pont Co. (United Kingdom), Ltd., 684

Vulvascot (Great Britain) Ltd., rubber conduit strip for cable, 633

Vybak Industrial rigid pvc-sheet for Hydrotron vapour blasting equipment (Bakelite), 284

Vybak Industrial rigid pvc-sheet for Hydrotron vapour blasting equipment (Bakelite), 284

### W

WADKIN, Ltd., continuous rotary milling machines, 420; Sherrill Speed Feed wide belt sanders, 634; tape controlled drilling machine (EMI Electronics), 762

Wage claims, comment on current, 429

— Demand, AEU, 637

— Position and prospects of, 364, 457

n engineering industry, position and prospects of, 8

Increase for civil engineering contracting industry workers, 164

— Payment by cheque, committee on, 699
— See also Income; Pay; Salary
Wagons, production statistics, 77

Railway, for mobile power station for Russia (Ruston & Hornsby), 805 — Purchase of, discussion in Parliament on, Repairs allocation of, 731

— Wood or all-metal, 428
Retarders at Temple Mills marshalling yard, 738

Wairakei geothermal power project, by J. H. Smith, 398

Wakefield Dick Industrial Oils Ltd., mixing unit for emulsions, 422
Wakeman, D. W., review of constitution of binary alloys, 154
Wales and Monmouthshire, report on

developments and Government action in, 672

in, 672
Walker, D. L., retirement as secretary, Federation of British Industries, 488
Walker, G. E., on AEI, 456
Walker, J., on atomic reactor controls, 686
Walker, L. E. Q., dictionary of named effects and laws (review), 311
Walker, W., Century No. 6 oil in gear test, 306
Walker, W. R., specific surface of concrete aggregates and its relation to workability of concrete (book), 253

aggregates and its relation to workability of concrete (book), 253
Wall, clad, trends in, 525
— Curtain, gold-anodised aluminium, for Hollywood office building, 804
— at Heinz factory at Kitt Green, 577
Wall, T., & Sons (Ice Cream), Ltd., plans for new factory at Gloucester, 199
— Underpinning, for Notting Hill Gate underground station, 383
Walling, trends in, 525
Walmsleys (Bury), Ltd., Correction, 16
Walsall Gas Works, completion of plant for, 594

Wansbrough-Jones, Major-General L., on world railway modernisation schemes, 531 Ward, F. A. B, time measurement (book), 29

Ward, G. N., review of Potential theory of

Ward, G. N., review of Potential theory of unsteady supersonic flow, 681
Ward, Thos. W., Ltd. 'Compri-Strip' filling strip (trade publication), 155;
Beton portable bar shearing machine, 293; Colt shearing machine, 293
Ward-Leonard control for Churchill roll-grinding machine wheelhead carriage motor, 127

— Sets at Willesden electrical testing

motor, 127

— Sets at Willesden electrical testing laboratory, 218

Wareing Bros. & Co., Ltd., Blackpete bituminous paint (trade publication), 650

Waring, A. B., annual statement on Joseph Lucas, Ltd., 39

Warmco smokeless fuel, 234

Warner, L. W., obituary, 419

Warning device, Integra, on Rhodesia locomotives, 52

Warren, W., appointed chief generating engineer, East Midlands Division, CEGB.

rren, W., appointed chief generating engineer, East Midlands Division, CEGB, 105

Warship. See under specific type of warship Washer, plastics, for asbestos cement sheets, Turnall, 495

Wheel, for motor vehicles (William Moseley (Engineers), Ltd.), 297
Washing facilities in Factories Acts, 535

Machine for dishes, ultrasonic (Westinghouse), 812

Hoovermatic production planning 526

— Hoovermatic, production planning, 526 — Servis, service arrangements for, 527 Spray, Efco industrial machine for (Electro-Chemical Engineering Co.), 729
Waste, electroplating, treatment of, 763

— Gas liquor disposal in River Trent in Stoke area, 672

Padicacting receiver recovery from 394

Radioactive, caesium recovery from, 394
 Disposal by distribution in insoluble medium, 237

Disposal of, at Lucas Heights, 394
Disposal of, in Pacific Ocean, 394
Disposal of, pipeline for, at Winfrith

394 — Disposal in the sea, 237

Water treatment and disposal,
Pollution Research Laboratory, 679

Pollution Research Laboratory, 679

See also Effluent
Watch and Clock Yearbook, 1959 (review), 649

Use of Mallory 1000 sintered high-density metal in, 345

Wrist, battery, Lip, 256
Water attack on glass, 31

Board, Metropolitan, 55th annual repor (1957-58), 311

Boiler, standards in CEGB, by R. L. L. Rees and F. J. R. Taylor, 247

Buffalo tractor transporter for swamp lands (Albion Motors), 358

Chilling sets, packaged, for Ahmadi Hospital, Kuwait (York Shipley), 781

Contamination of aircraft fuels, 647

Decomposition in water reactors, 238

Engineers, Institution of. See Institution

— Plea for establishing identity of, by D. Whiteley, 759

Feed, standards in CEGB, by R. L. L. Paece and E. J. P. Taylor, 247

Whiteley, 759
Feed, standards in CEGB, by R. L. L. Rees and F. J. R. Taylor, 247
Flow in channels and pipes, formulae in graphical form for, 473
Measurement of large, National Engi-

neering Laboratory report on, 643

- Speed and direction, meter for (Kelvin Hughes), 70

Hughes), 70

Gas. See Gas

Geothermal, utilisation of, 401

Heater, oil-fired domestic, Silver Flame (Kimber & Lovegrove), 96

Heavy. See Heavy water

Hot, in Factories Acts, 535

See also Boiler

Level indicator, closed-circuit television system (Hopkinsons), 166

Loop, high-pressure, for DIDO reactor, 460

in lubricant, effect on pitting in ball bearings, 403

Main, boring for Hyde Park road improvement, 611

ment, 611

ment, 611

--- Ships', positive displacement pump for (Goodyear Pumps), 486

- Mixing valve, hot/cold, for showers (Meynell & Sons, Ltd.). 453

- Pollution Research Laboratory, waste water treatment and disposal, 679

- power See Hydroulic: Hydrocalectric:

water treatment and disposal, 679

power. See Hydraulic; Hydro-electric;
Turbine, hydraulic

Research Association, activities of, 759

Sea, Aquaflash flash distillation plant for (Buckley & Taylor, Ltd.), 229

Separators evaluation by Shell Research, 647

Shallow, wave formation in, by D. Manabe, 776

Speed record, US challenge, 694

— Supply industry, rationalisation of, 291
— Piped, in England and Wales, 596
— Services, grants for unemployment areas, 386 See also Irrigation

See also Irrigation
Surface, quality of, in Illinois, by T. E. Larson and B. O. Larson (book), 154
Yearbook, 291
Treatment for industrial high-pressure boiler plant, by J. Arthurs, J. A. Robins and T. B. Whitefoot, 247
Turbine. See Turbine, hydraulic
Undertakings, rationalisation of, 291
Utilisation, integrated, master plans for, by K. Sain (book), 93
Waste, treatment and disposal Water

Waste, treatment and disposal, Water Pollution Research Laboratory, 679
Waterfall, F. D., Sulfinuz surface treatment process, 116

waterways, inland. See Inland Waterways
Wates, Ltd., suspended scaffolding, 439; walls
for 18 storey flats, 525; 3-day course for
schoolboys, 537
Watkinson, H., on effects of railway reorganisation, 330
Watson, H. T., Ltd., drum suction strainer, 621
Watson Industrial Plastics, Ltd., reinforced
plastics (trade publication), 746
Watt, James, work with Matthew Bolton, 520
Watt, W., oxidation of zirconium carbide, 91
Wave formation in shallow water, by D.
Manabe, 776
— Radio, of sun, study of spectra

Wave, radio, sources of, 744

— Systems, travelling (trade publication), 650
Wax, paraffin, pumping and distribution at Price's Patent Candle Co., Ltd., 156
Weapons, airborne, complexity of, by D. W. Douglas, 572

— Atomic. See also Atomic Weapons Research Establishment

— Guided Seeplan telemetry equipment in

Guided, Seaslug, telemetry equipment in, 113

— Telemetry equipment for (Armstrong-Whitworth), 113
— See also Missile; Rocket; Satellite
— See also Gun
Wear, Sulfinuz process for resistance to, 116
— Tests on Sulfinuz treated surfaces, 117
— Testing machine, Amsler, 117
Weatherometer at elastomers research laboratory of Du Pont Co. (United Kingdom), Ltd., 684
Weatherproofing, Evode process for timber

Weatherproofing, Evode process for timber conoid roof, 408

conoid roof, 408
Webb Conveyors and Automation, Ltd.,
K. L. Coombs appointed divisional
manager, 456; activities of, 456
Weber, C., theory of torsion (review), 282
Webster, Peter, Ltd., Trimarian yacht, 86
Wedgwood, Josiah, & Sons, Ltd., work study
in training, 429

in training, 429
ir Committee report on cooperation between electricity and gas boards, 511
ir, G. & J., Ltd., steam turbines (trade publication), 28; boiler feed regulator (trade publication), 443; WL turbo-pump unit, 487

Weir, G. & J., Holdings, Ltd., trading profits, 796

Weir, G. & J., Holdings, Edd., frading profits, 796
Weir, Hon. J. K., on G. & J. Weir's trading profits, 796
Weiss, M. L., on shielding of marine atomic power plants, 545
Weizmann Institute of Science, Graduate School of Natural Science at Rehovot, 259
Welbourn, D. B., review of Engineering systems analysis, by R. L. Sutherland, 586
Welds, X-ray examination at International Combustion, Ltd., 723
Welded construction, heavy, arc, work measurement and productivity comparison in, by A. G. Thompson, 242
— for technologists, by P. Sahmel (review), 501
— Fabrication at International Combustion,

 Fabrication at International Combustion, Ltd., 723 Ltd., 723
Platework, low temperature stress relieving, by J. C. Dixon, 651. See Letter, 695
Rails, long, handling of, 739
Steel boilers, metal-arc, rules for construction testing of scantlings of (book),

— Piles, stress relieving of, 651
 — Tubular steel construction for dock transit shed, 94

shed, 94
Welding, arc, equipment for (English Electric Co., Ltd.), 4
— Automatic, translation of Russian journal by BWRA, 501
— Electrodes, Fortrex (Murex), 556
— Ironex (Murex), 556
— Manufacture of (English Electric Co., 1 td.) 4

Ltd.), 4

- Nicrex (Murex), 556

- Production planning of (Quasi-Arc, Ltd.), 526

- Electron beam (Edwards High Vacuum), 69
- Equipment, synchronous (British Thomson-Houston), 326

- Exhibition. See Engineering, Marine, Welding and Nuclear Energy Exhibition in gear manufacture (David Brown), 785
- in gearcase fabrication (David Brown), 786

in gear manufacture (David Brown), 785
in gearcase fabrication (David Brown), 786
Gun, "pull-through," for thin aluminium (British Aluminium Co.), 503
Head, high-frequency, Thermatool, for aluminium tube (New Rochelle Tool Corp.), 446
High-frequency, of aluminium tube from roll-formed strip (Elm Engineering), 446
Institute of. See Institute
Machine, arc, Fararc 200 portable heavy duty (Portable Welders, Ltd.), 37
Driam, for helically welded pile casings, 804

Slag, Vertomatic automatic (Rockweld), 556 - Pipe, manipulator for on site (Quasi-Arc), 222

222

Plate, for magnet sectors, 753

Research Association, British. See British Welding Research Association

Resistance casting (stud raising) spot process (BWRA), 59

Rods, storage of (David Brown), 786

Rotator (Yates Plant, Ltd.), 294

in shipbuilding, 561

Spot, stud raising process (BWRA), 59

in shipbuilding, 561
 Spot, stud raising process (BWRA), 59
 of Stelvetite plastics coated steel, 210
 Stud, equipment for arc welding transformers, 730
 Raising process (BWRA), 59
 Welding Technical Services, Ltd., Weltexa stainless steel piping system (trade publication), 155
 Technology, conserve and

lication), 155

Technology, economy and productivity through (review), 501

Transformers (English Electric Co., Ltd.), 4

— Stud welding equipment for (Stud Welding Applications Co.), 730

Welfare at Carl Zeiss Foundation, 199

— Society, Industrial. See Industrial

Wells, gas, detergent foam for clearing, 747

Wellens, J., on The Bulge: Its National Impact,
A National Plan (booklet), 386; on The Bulge: Its Industrial Impact (pamphlet),
417

Wellman Smith Owen Engineering Corp., Ltd.

pre-refining vessel for Brymbo Steel Works, 657
Welsh Statistics, Digest for, publication of, 672
Welvic pvc drainpipes and roof gutters (ICI),
416

416
Wenvoe, VHF transmissions from, 384
Werner Institute for Nuclear Chemistry, brain surgery by proton beam, 302
Milling machines with finger tip control Rockwell Machine Tool Co.), 261

Wessex Industries, Ltd., Wrigley 3-ton capacity low load trailer, 634
West, Allen, & Co., Ltd., machining of steel sheet cover by turret lathe, 524
— Midlands Gas Board, completion of Walsall Gas Works, 594
— Pakistan Water and Power Development Authority, 495
— Thurrock, power station, contract to

- Thurrock power station, contract to Richard Costain, 804
Westcott, G. F., on British railway locomotive 1803-1853 (book), 343
Western Counties Brick Co., perforated brick, 495

Western Electric Co., Inc., hydrothermal process for quartz crystal production, 219

— Society of Engineering (Chicago), question-naire on deficiencies of engineers, 170 Westinghouse Brake & Signal Co., Ltd., mining equipment (trade publication), 474 Westinghouse Electric Corp., new atomic reactor design concepts, 13; thermoelectric substances for direct conversion 13: reactor design concepts, 13; thermoelectric substances for direct conversion, 13; organic-moderated fluid-bed reactor, 13; withdrawal from aqueous homogeneous reactor project, 79; 330 MW atomic power plant, 267; 5 MW atomic power plant for Saxton (Penn.), 267; scholarship awards, 397; natural-circulation pressurised-water reactor with nucleate boiling, 675; giant high-fidelity amplifier for missile research, 678; combined standard and microwave cooker, 812; ultrasonic dish washer, 812

678; combined standard and microwave cooker, 812; ultrasonic dish washer, 812

— Testing Reactor. See WTR

Westland Aircraft, Ltd., Heliport on Battersea bank of River Thames, 542

Westool, Ltd., refrigerating unit for dry storage, 532; air conditioning for strip mill control cabin at Stewarts and Lloyds, 557; "Help Yourself Game" (individual productivity incentive), 765

West's Piling & Construction Co., Ltd., pile system for stamp shop at Hawker Aircraft factory at Squires Gate, 213

Westwater, F. L., review of Switching circuits—

Westwater, F. L., review of Switching circuitswith computer applications, by W. S. Humphrey, Jr., 585. See also 586
Westwood, Joseph, & Co., stressed steel girder for underpinning without props, 280; rail-over-road bridge replacement at Bethnal Green, 408

Bethnal Green, 408
Westwood, Sons & Partners, new building for CIBA (ARL), Ltd., 707
Weyl, A. R., review of technical thermodynamics by E. Schmidt, 60; review of thermal turbines, vol. 1, by W. Traupel, 60; review of Higher Technical Mechanics 60; review of Higher Technical Mechanics,

by I. Szabo, 122
Whaling factory ship, atomic-propelled, proposal for, 548
Wharncliffe Viaduct, 540

Wharnchine Viaduct, 340
Wheat grinding rollermills at Barnes Milling,
Ltd. (Thomas Robinson), 156
Wheel adhesion in electric trains, study of, at
Willesden laboratory, 218
— Gear. See Gear wheel
— Truck, "life-long" lubrication of, 479
— Tube train, tests to determine impact on
rails, 774

- Washer for motor vehicles (William Moseley (Engineers), Ltd.), 297
Wheeler, C. R., on world iron ore situation, 593
Whessoe, Ltd., history of (trade publication),

Which? publication of Consumers' Association, 628
Whirl, shaft, amplitude calculation, 181
— with gas film bearings on, 178 Measurement of, 178

— — with oil film bearings, 180
Whitaker's Almanack, 1959 (review), 310
White, B., on application of standards in the firm, 781

White, Sir Bruce, Wolfe Barry and Partners, new works at Hull docks, 670

White, H. C., on training the sales force, 511

— Paper. See under subject

White, W. P., demountable vacuum-tight pipe coupling (book), 92

Whitefoot, T. B., treatment of water for industrial high-pressure boiler plant, 247

Whitehead, L. & W., Ltd., Notting Hill Gate underground station, 384
Whitehouse Industries, Ltd., Philadas self-locking nuts (trade publication), 554
Whitelegg, Frank, Ltd., coil-winder (trade publication), 474
Whiteley D. on water engineers, 759

Whiteley, D., on water engineers, 759
Whiteley, P., Truscon Scholarship, 804
Whitlock Bros., Ltd., diggers (trade publication), 155
Whitstable industrial estate, 643
Whiteverth Followship in reason in value of

Whitworth Fellowship, increase in value of, 566; modification in rules of, 566 Who's Who, Shipping World, by A. Hurd (book), 29
Wico-Pacy Sales Corp., Wipac Filter-Link visible fuel filter and shock absorber, 45 Widnes-Runcorn Bridge, new north approach

Wiggin, Henry, & Co., Ltd., Wiggin nickel alloys v. fluorine and fluorine compounds (publication), 343; booklet on some properties of Wiggin electrical resistance materials, 501; Nimonic alloys (trade publication), 745

publication), 746
Wigglesworth, Dr. V. B., hypothesis on juvenile hormone, 796
Wigner, Prof. E. P., 2nd Enrico Fermi Award,

Wilbur Wright Memorial Lecture on managing aviation technologies, by C. J. McCarthy, 669

Wild-Barfield-NRC vacuum induction melting furnace, 627

Wilhelmshaven oilport, 663
Wilkins, G., on standards for the motor industry, 104; on Lotus sports car pro-

gramme, 240; on Geneva International Motor Show, 329; on oil filters, 544; on Triumph Herald motor car, 580; on Riley 4/68 motor car, 612; on Standard motor cars, 644; on hydraulic power steering system, 708; on Dr. G. Farina's car styling studio, 708; on Renault Floride motor car, 708; on Shamrock plastics-bodied prototype sports car, 708; on Russian motor industry, 740 Wilkins & Mitchell, Ltd., service arrangements for Servis washing machine, 527 Wilkinson, John, work with James Watt, 520

Wilkinson, John, work with James Watt, 520 Williams, A., on design of bungalow, 291 Williams, Dr. C. G., on lubricants under radiation, 715

Williams, Prof. C. M., research on juvenile hormone, 796

Williams, F. E., on automatic sensitivity control for new subscriber telephone set, 512; on Post Office 700-type telephone, 512 Williams, Lady G., Recruitment to Skilled Trades, 635

Williams, J., on uranium oxide-iron cermets, 91
Williams, J. T. E., on iron and steel works
buildings at Corby Works, 220
Williams & James (Engineers), Ltd., oil-free
air compressors, 809
Williams, T. I., history of technology. Vol. 5
(review), 216
Williams, Dr. T. J., on induction ramming of
reciprocating engines 370

reciprocating engines, 370
Williams, W. C., obituary, 356
Wilson, A. H., chairman of coal by-products

committee, 630 Wilson & Co., Ltd., bodies for Cargo Lift vans and trucks, 781

Wilson, D. B., on melting shop load distribution and gantry rail maintenance, 220 Wilson, Dr. E. J., on atomic light, 497 Wilson, F. A., on automatic sensitivity control

for new subscriber telephone set, 512 Wilson & Longbottom, Ltd., Shirley loom for continuous filament yarns, 77

Wilson, R., on house magazines, 364
Wimpey, George, & Co., Ltd., borings for
Channel Tunnel project, 495; annual
report, 732

Winch, capstan, pneumatic, portable (Globe Pneumatic Engineering Co.), 358

— Cargo, with automatic excitation control (Stothert & Pitt), 664

— Hydrostatic drive for, 655

with regenerative braking (Clarke, Chapman), 484

— Trawl, Robertson electric, for trawler Falstaff, 375
Wind loading effects on roofs, 707

Power generator progress, ERA, 679 Pressures in US (report), 739 Tunnel, hypersonic, with 18,000 m.p.h. airflow (Boeing), 219

- Supersonic, at Aircraft Research Association, 187 Transonic, at Aircraft Research Asso-

Winder, coil (trade publication), 474 Winding, fractional slot, digital computer for design of, 719

— Plant, skip, at Rufford Colliery, 338

Windmill, Allgaier, 679

— for Isle of Man, 25 kW (Dowsett), 679

Research developments, ERA, 679 Windscale accident, radioactivity survey after, 237

AGR reactor for ship propulsion, 639 HERO reactor for, 206, 239 Refuelling machine contract for AGR reactor, 491; diesel generator sets for AGR reactor, 491
 Windschuegl, Charles H., Ltd., solvents, resinates and plasticisers, 747
 Windsor Bridge over River Thames, 538
 Windsor Ltd. feeters contract for Pursic 757

Windsor, Ltd., factory contract for Russia. 757 Winfrith Heath, reorganisation at, 205; thermonuclear research at, 205; DRAGON atomic reactor project, 239, 395; ZENITH (HTZER) reactor, data on, 239; personnel requirements estimate, 240; pipeline for effluent from, 394; Dragon reactor pro-

ject, 425 Wings, delta, flow over, at low speeds with leading edge separation, by D. J. Marsden, R. W. Simpson, and W. J. Rainbird (book), 311

Structure of Vanguard airliner, 15 Torsion box on Vanguard airliner, 15
Winterberg, F., on higher thermal efficiency
for gas-cooled reactor, 547
Wipac Filter-Link fuel filter and shock

absorber, 45 Wires, exports of, 146-147 Forming machines, Heenan manual on (book), 92 - Instrument, PTFE insulated (Siemens Edison Swan), 345

Manufacturing industry, position and prospects of, 145 Race anti-friction bearings, 339

Rod and strip, Lindsay's international register, 1957-1958 (review), 310
and strip (trade publication), 283
Vulcanising unit, high-pressure, at elastomers research laboratory of Du Pont Co.

(United Kingdom), Ltd., 684 Wiredrawing machine, flame-plating of aluminium alloy pulleys for, 59
Wireless telegraphy, See Ongar Radio Station
— See also Radar; Radio; Telegraphy;

Television Wiring, electrical, ring system, 724 Woden Transformer Co., Ltd., wire contact relay, patchboard, and torque motor, 421 Wolf "Safetymaster" motorised hand drill,

Wolfe award to Dr. L. Essen, 397 Wolfe, B., on shielding of marine atomic power plants, 545

Wolfendale, E., junction transistor and its applications (review), 801 Women, apprenticeships, for (Plessey Co.), 170

See also Girl — in engineering, meeting at IEE, 489
— to man pay ratio, 489
Wonfor, R., promotion of British trade with Russia, 328

Wood, B., on measuring gear teeth errors under load, 614

Wood export statistics, 183
Wood Fibre Wallboard Co., Ltd., Masonite
Benelex hardboard (trade publication), 377

— Statistics on, 183, 363 Wood, J., guide to taxpayer (book), 162 Wood, R., on work for elderly persons, 330

for railway rolling stock, 428

Sawn, world output, 183
 See also Plywood; Timber
 Woodbridge, E., on standards in motor industry, 104
 Woodfield Rochester, Ltd., pneumatic hosehandling equipment at Fawley Refinery, 563

Woodhall-Duckham, carbonising plant for Walsall Gas Works, 594
Woodroffe, O. P., on overspeed trip for reciprocating engines, 508

Wool, mineral, pipe insulating section (Stillite), 579 Wooldridge, D. E., handbook of automation, computation and control (review), 713
Wooldridge, E. F., on steelworks structures,

Worcestershire and Staffordshire canal improvements, 776
Work measurement, engineered, by D. W. Karger and F. H. Bayha (review), 282

— Methods of, 243

— Objects and problems of 242

— — Objects and problems of, 242 — and productivity comparison in heavy arc welded construction, by A. G. Thompson, 242 Study for ice cream factory at Bridge Park

(Lyons), 690 (Lyons), 690
 School (Cranfield), new printing factory of Perivan Group, 690
 in training at Josiah Wedgwood, 429
 Virtual, and complementary energy applied to non-linear braced frameworks, by Prof.

A. L. Matheson, 581 Worker, fitting the job to the (book), 746

— the job to the, EPA conference, 365

— Skilled, shortage of, 635

Working hours. See Hours of labour

— Life, length of (booklet), 364

Workshop arithmetic, by H. A. Darling (book), 343
World Bank. See *International Bank*World Development Corp., proposed formation of, 790-791

Economic survey (1958), 758

Events, Annual Register of, 745

Health Organisation, "Mental Health," 669

Population, future growth of (book), 331

Railways, 1958-59, by H. Sampson (review),

Wood import and export statistics, 183 Worthington-Simpson, Ltd., pumps for sterilisation heat recovery process at Kitt Green factory of H. J. Heinz, 783; trading profits, 796

Wright Boag and Heat Wrightson (Pty.), Ltd., activities of, 337 Wright, Frank Lloyd, on architects, 565 Wright Rain, Ltd., mechanised irrigation equipment, 704; frost protection of crops

with irrigation equipment, 705; centrifugal pump for irrigation, 705; Manure Rain system, 705; Tow Line pipeline irrigation system, 705; lightweight garden sprinkler, 705

Wright, W. J., on uranium oxide-iron cermets, 01

Wright, Wilbur. See Wilbur Wright Memorial Wright-Patterson, school for training monkeys as pilots, 331

Wrigley 3-ton capacity low load trailer (Wessex Industries), 634
Wrist watch. See Watch Writer, technical, by J. W. Godfrey and G. Parr (book), 123

Writing, technical, bibliography of, 553

— RIC premium awards for, 573
Wrought iron. See *Iron* WTR reactor, progress on, 461 Wyatt, L. M., consolidated report on metallurgy and fuels, 106, 136 Wye Bridge, Chepstow, 538

Wyer, J., review of The motor vehicle, 443

## X

X-15 upper atmosphere research aircraft (North American Aviation), 361; launching preparations, 678 X-8001 aluminium-nickel alloy in ALPR

reactor, 463 ay equipment, portable, for plastics, fibres and light alloys (Marconi Instruments), 533

Examination of mineworkers, 142 - Examination of welds at International Combustion, Ltd., 723

— — Image amplifier, Marconi, 773 Xenon in lunar atmosphere, 333 Xerographic computer printing machine, "Xeronic" (Rank Precision Industries),

Xerography, microfilm, Copyflo system, for reproduction of drawings (Rank-Xerox), "Xeronic" xerographic computer printing machine (Rank Precision Industries), 241 Y

Xetal Products, Ltd., Tuflite hair packagin g material, 780

Xi-zero particle, discovery of, 367

YACHT, motor, Bevinda, plastics-hulled, 87

— at National Boat Show, 86

Research Society, Amateur. See Amateur
 Trimarian (P. Webster, Ltd.), 86
 Yale & Towne Manufacturing Co., acquisition of E. Tonks & Sons, Ltd., 488

Yale University, graduate programme in urban planning and traffic engineering, 573; town planning and traffic engineering programme, 573; traffic engineering course, 672

Yard, international, standards laboratories, agreement on, 35

Yarn, polyethylene, for ropes, 748

— Spinners Association, Restrictive Practices
Court's ruling on price fixing agreements Yarrow & Co., Ltd., Ashanti frigate with steam

plus gas turbines, 434 Yates Plant Ltd., welding rotator, 294 Yawed conical shock, exact flow behind, by G. Radhakrishnan (book), 311

Yeabsley, Sir R., resignation from board of F. Perkins, Ltd., 328

F. Perkins, Ltd., 328
Yearbook, British Plastics, 1959 (review), 649
— Forest Products Statistics, 183
— International Organisations, 1958-59, 283
— Kempe's Engineers', 1959, by C. E. Prockter and B. W. Pendred (review), 649
— Mechanical World, 1959 (review), 649
— World Electrical, 1959 (review), 649
— Physical Society, 1958, 310
— Shipping World, by A. Hurd (book), 29
— and Technical Guide, 1958-59 (review), 649
— Watch and Clock, 1959 (review), 649
Yegorov, V. A., on trajectories for lunar

Yegorov, V. A., on trajectories for lunar flights, 332
York Shipley, Ltd., packaged water chilling sets for Ahmadi Hospital, Kuwait, 781
Yorke, F. R. S., modern flats (review), 778
Yorkshire Engine Co., Ltd., Bo-Bo 400 h.p.

Yorkshire Engine Co., Ltd., Bo-Bo 400 h.p. diesel-electric locomotive for African Manganese Co. (Mines Management), Ltd., 132; 170 h.p. diesel-mechanical shunting locomotive, 132
Yorkshire Imperial Metals, unorthodox copper sections, 556; plastics-covered copper tubes, 556
Young, C. R., early engineering education at Toronto, 1851-1919 (book), 29
Young, James (Contractors), Ltd., Loch Glashan hydroelectric scheme, 579
Young people. See Youth

Young people. See Youth Young & Purves skip winding plant at Rufford Colliery, 338
Young, R. H., friction charts for air flow in straight ducts and pipes (book), 746
Young Scientist (Butterworth), note on, 29

Youth, careers for, NUT annual guide, 364

— Elixir of, research on, 796 Employment, BBC pamphlet on broadcasts on, 765

Discussion in Parliament on, 635 Yttrium in workable form, 176 ugoslavian mining engineers visit to UK, 73 Yukon oil exploration, 430

ZAAR, P. B., basic electricity (book), 746 Zanzibar telephone subscribers, Plain Words on, 482 Zebra column for solvent extraction process,

Computer for transonic wind tunnel, 187 Zeiss, Carl, Foundation, welfare at, 199

— Toolmakers' measuring microscope, 420

ZENITH (HTZER) reactor at Winfrith Heath data on, 239

Zephyr motor car, restyling of (Ford), 265

— Photoprinting machine (NIG Manufacturing Co.), 532 Zerlina reactor (India), 80 Zero Leakage pump (Sigmund), 696

ZETA, circuit changes in, 607 Continuous liner for, 606 Energy of ions in, 205
Engineering problems outstanding, 606 Modifications to, 606

Pumping arrangements, 607
"Runaway" ions in, 205
Stainless steel liner for, 703
Switching modifications, 607
Torus design, 606

Vacuum system, 607 - Vitreous-enamelled torus for, 205 — I, modification to, 205 — IA, continuous liner for, 607 — Pulse circuit of, 607 Zim motor car, 740

Zinc, quota imposed by US for, 8 Sulphide luminescent crystals, 497 Zircaloy-2 as atomic reactor canning material,

Zirconium alloys for atomic reactor canning material, 138 Hydrogen embrittlement of, 138 Ozhennite, corrosion resistance of, 138

Canning for atomic reactor, 137
Carbide, oxidation of, by W. Watt, 91
Dissolution in bismuth, 317
Nitrate protective layer, 317

Uranium-hydrogen alloys, thermal conductivity of, 138 Vacuum melting, 626, 627

ZIS motor car, 740 Zodiac motor car, restyling of (Ford), 26 Zublin, Ed., AG, 60th anniversary, 707