

include extensive research in industry, in the universities and in Government bureaux to develop new products and processes, the improvement of educational standards and the technique of production and distribution and of transport, building and public health.

The expansion of expenditure on public welfare, including old-age pensions and family allowances, is suggested, and the importance for international co-operation of pursuing internal policies designed to promote active employment as well as for the development of backward countries and for implementing ways and means to open outlets for foreign investment, promote world trade and the world-wide use of productive resources is recognized. With regard to the war period, a policy of high income and excess profits tax with a broadening of the individual income-tax base and steeply graded surtax-rates is advocated, as well as the part-payment of wages and salaries in defence bonds and a sharp increase in excise taxes on commodities competing with the war programme. In the post-war period a policy of retaining the progressive tax structure and broadened tax base with a major emphasis on the individual income-tax and less reliance on the corporate income-tax is suggested, together with a sharp reduction in defence consumption taxes and adequate plans by private enterprise for investment in manufacturing plant and equipment, railroads, public utilities and housing.

#### The Third Earl of Rosse and his Telescopes

MR. M. A. ELLISON has described (*J. Brit. Astro. Assoc.*, 52, Sept. 8, 1942) the celebrated experiments of William Parsons between 1827 and 1845 for the improvement of reflecting telescopes. The earlier workers in speculum metal had jealously guarded their secrets of grinding and polishing, and each step in the process had to be established anew by experimenters. The earliest researches of Parsons were undertaken to determine the composition of speculum metal, which should possess the qualities of whiteness, high reflectivity, and resistance to tarnish. It was found that the conditions were best realized in an alloy of four atoms of copper to one of tin, and specula differing to a slight degree from this proportion of the alloys were found to dim rapidly, though they were quite brilliant when polished. Unfortunately, this alloy was liable to shiver at the slightest blow or sudden temperature changes, and attempts to cast it in disks more than about a foot in diameter were abandoned.

A description is given of the different telescopes—the 3-ft., the 6-ft., and the 18-in. reflectors—and also of their mountings. There was a general impression that the 6-ft. reflector had an altazimuth mounting. Actually, the movements of this telescope were equatorial, but they were limited to one half-hour on each side of the meridian. It is interesting to notice that  $\gamma_2$  Andromedæ was used as evidence of its defining power. Robinson records that he saw the system distinctly, as two neatly separated stars, under a power of 828. The separation at this time (1845) was about 0.5". The paper concludes with a list of assistants at Birr Castle Observatory and a short account of their work.

#### Indian Precious Stones

THE Geological Survey of India has recently commenced the publication of a series of Bulletins of Economic Minerals as a war-time measure to direct attention to India's mineral resources. Those issued

in 1941 deal with chromite, strontium minerals, phosphates and clay, and several others are in preparation. No. 6 (1942), "Indian Precious Stones", by Dr. L. A. N. Iyer, is a useful pamphlet of fifty-four pages, with two plates illustrating the mining of ruby at Mogok in Burma. It rather gives the impression of a hasty compilation from scattered sources of information; but some additional matter is given relating to the Mogok "stone tract", where the author was engaged in the production of the Geological Survey maps. There, in addition to ruby, a considerable variety of minerals of gem quality has been found. Apart from these, and the sapphire of Kashmir and the many gemstones of Ceylon, there are really few occurrences of importance in India proper, except for semi-precious stones such as agate and almandine garnet.

At one time, however, India was the only known source of diamond, and many of the famous stones found centuries ago are of Indian origin. (One of these, known as "The Moon of the Mountains", was sold by auction in London in August 1942 for £5,200.) At the present time the production is very small, averaging for the years 1929-33 less than 1,500 carats (300 grams) and valued at 74,040 rupees (£5,555), the bulk of this coming from Panna State. It would be interesting to know how many persons, working by primitive methods in small and scattered pits, were engaged in producing this handful ( $\frac{3}{8}$  lb.) of small diamonds. They would be of no use in the trade as industrial diamonds. India is actually a large importer of diamonds for jewellery purposes. At one time India was also the sole producer of corundum (of which ruby and sapphire are colour varieties of gem quality) for abrasive purposes, and in fact the name corundum is of Indian origin, but the present output is again very small.

#### Refrigeration of Fish in Australia

AN account of the application of refrigeration to the Australian fishery industry has been published by the Council for Scientific and Industrial Research (Commonwealth of Australia: Division of Food Preservation and Transport. Circular No. 4.-P, Melbourne 1, 1942). This is written in non-technical language and has been prepared to serve as a guide to the fish industry on the basic refrigeration requirements. As the result of a survey of the important fishing centres along the south coast of New South Wales and some centres in Victoria and Tasmania, it was found that it was possible to catch in eastern Australian waters considerable supplies of fish suitable for an important canning industry as well as for a substantial trade in fresh fish. Serious difficulties must, however, be overcome before any great expansion can take place. These notes are issued as a guide to future development based on the necessity for preserving fish by refrigeration to meet the requirements of a large and stable industry.

#### Tin Economy in Cable Jointing

A NEW type of wipe or fillet joint is described by J. T. Lowe (*Bell Lab. Rec.*, 20, No. 11, July 1942) which makes it possible to meet the essential requirements for a wiped joint using far less solder without the necessity for a new wiping technique. Essentially, the new method consists of carefully beating in the cable sleeve ends to the proper shape to facilitate formation of a satisfactory fillet of solder and to obviate rounding out the sleeve ends with solder.



Tests of strength, resistance to fatigue and gas-tightness show the new joints to be fully as good as the old. The wiping technique is somewhat simpler and is well liked by jointers. The adoption of the new technique reduces the amount of tin the Bell System would ordinarily need for wiping solders by more than 60 per cent.

### Distribution of the Stars

DR. BART J. BOK, of Harvard, has made a report (*Sky and Telescope*, August) on one of the first results of work by the so-called "star-counting circuit", which is an informal organization of several observatories in the United States and other countries. A search was made for comparatively unobscured regions along the Milky Way, and several fields have been discovered in which the light of the distant stars is only slightly dimmed by the absorption of interstellar matter. The most notable clear regions are in the constellations of Cepheus, Auriga, Monoceros, Carina and Centaurus. In the portion of the Milky Way which lies between the southern Coalsack and Cygnus, in which the star clouds of Sagittarius and Scutum fall, there are no regions which are relatively unobscured. Even for the brightest patches in this section the light of stars at 3,000 light years from the sun is dimmed by a whole magnitude. It appears that the stars of different spectral classes are not well mixed in our part of the Milky Way. It is remarkable that there is a rapid initial decrease in star densities for all classes in the direction of the galactic nucleus, and at 1,000 light-years from the sun the densities are very low. Higher densities are not found for the central regions until we reach three to five thousand light-years from the sun.

### Bibliography of Seismology

THE present number of this important bibliography (13, No. 11, January to June, 1942), published at the Dominion Observatory at Ottawa by Ernest A. Hodgson with the assistance of four collaborators, maintains its previous high standard. There are seventy-seven items culled from world-wide sources covering topics from the strength of rock materials to world structure. Many items concern patents for geophysical prospecting such as item 5326, Williams, P. S., "Seismic Exploration Method", U.S. Patent 2,253,358, Aug. 19, 1941, and Beers, R. F., "Means for Analysing and Determining Geologic Strata", U.S. Patent 2,249,108, July 15, 1941. Items from *NATURE* and *Science News Letter* are included. There has been some discussion recently concerning the geology of the beds of the oceans especially near shore-lines. This enhanced interest is mirrored in item 5313, Jones, O. T., "Continental Slopes and Shelves", *Geographical Journal*, 97, No. 2, 80-99 (London, Feb., 1941); and in item 5341, Shepard, Francis P., and Emery, K. O., "Submarine Topography off the California Coast", Geological Society of America Special Publications, No. 31, 171 pp., 4 charts, 18 pl., 42 fig. (New York, 1941). Reginald A. Daly made a contribution to *NATURE* concerning "Glaciation and Submarine Valleys" on Feb. 7, 1942 (pp. 156-60), item 5291.

### Earthquakes Registered in New Zealand

DURING June 1942, eight large earthquakes were registered by the seismographs at Wellington, Auckland, Christchurch and Arapuni, according to Provisional Bulletin No. P-124 of the Dominion Observa-

tory, Wellington. Two prominent shocks were on June 6 with epicentre east of the New Guinea region and focal depth about 100 km., and on June 24 at Wairarapa. Thirty-one local earthquakes were recorded during the period, including the Wairarapa shock mentioned above. This reached intensity 7 on the instrumental magnitude scale (New Zealand Bulletin P-104, p. 3) and was followed by nine principal aftershocks and about 418 minor shocks. Several of the aftershocks reached intensity  $4\frac{1}{2}$ , and on June 25 an earthquake of intensity 4 was felt at Hokitika.

### Research in Industry

IN connexion with the discussion of the relation of academic and industrial scientific research, Mr. Foster Sproxtton has raised the question, in correspondence, of the position of the smaller industries which have no research associations. They may have problems arising in chemistry, physics, the various branches of engineering, or problems involving the biological sciences, outside the field of the regular scientific staffs employed at the factories. Guidance in the choice of an academic consultant would be of the greatest value in such industries. Mr. Sproxtton believes that some kind of panel of academic scientific workers willing to assist in the solution of industrial problems would be of service, and suggests tentatively that such a function might form part of the activities of the Central Register.

### Dr. Gustav Retzius

DR. GUSTAV MAGNUS RETZIUS, a celebrated Swedish biologist, was born at Stockholm on October 17, 1842, the son of an eminent anatomist. He received his medical education at Uppsala and Stockholm, and qualified at Lund in 1871. Six years later he became 'extraordinary' professor of anatomy at the Caroline Institute at Stockholm. In 1889 he was appointed full professor, but resigned in the following year in order to devote himself entirely to scientific research, particularly in anatomy and anthropology, for which he travelled extensively in Europe and America. Most of his work was concerned with naked eye and microscopical anatomy, but he also made studies in embryology, anthropology, zoology and botany, so that he was a biologist in the fullest sense of the term. Between 1876 and 1906 he published six illustrated folios, the first of which was devoted to the anatomy of the nervous system and connective tissue, the second and third to anthropology, the fourth and fifth to the brain of man and monkeys and the sixth to the organ of hearing. His name has been given to parallel brown lines crossing the enamel-prisms of the teeth seen on cutting the enamel, and, with that of Key, to two foramina in the brain. He was awarded many prizes for his work, including the Montyon Prize of the Institut de France. He died on July 21, 1919.

DR. WILLIAM BRADLEY, lecturer in tinctorial chemistry and dyestuffs in the Manchester College of Technology, has joined the scientific staff of the British Drug Houses Ltd. His research work in organic chemistry includes the disclosure of the mechanism of the so-called Nierenstein reaction, the development of the theory of aromatic substitution by anionoid reagents, and the advancement of the chemistry of the anthocyanidins and of benzanthrone.