

With breast cancer, operation is generally successful in early cases, but when the axilla is involved, much less so. For the latter, radium therapy has been extensively tried with questionable success, and X-rays are probably a more suitable agent. In uterine cancer, frankly operable cases are treated as successfully by radium as by surgery, but with a smaller operation mortality, and surgically inoperable cases treated by radiation yield a by no means negligible percentage of clinical cures. Certain non-malignant conditions also respond well to radium treatment, for example, uterine hæmorrhage. Several important experimental researches are also included in the report.

It is estimated that the total quantity of radium available for treatment in Great Britain is now about 70 gm. Of this amount, the Radium Commission controls 23 gm., which includes 20 gm. placed at its disposal by the Radium Trust, and three 1 gm. units, the property of the King Edward's Hospital Fund (Fifth Annual Reports of the National Radium Trust and Radium Commission 1933-1934. H.M. Stationery Office. 9d. net). The radium is distributed for use for experimental work and treatment between the Medical Research Council and the National Physical Laboratory, certain London hospitals and institutions, and thirteen national radium centres and five regional radium centres. In addition, allocations have been made by certain organisations, such as the British Empire Cancer Campaign, and a considerable amount of radium is privately owned.

#### National Medical Statistics

THE Registrar-General's Statistical Review of England and Wales for the Year 1933 (Tables, Part 1: Medical), pp. iv+406, has recently been published (London: H.M. Stationery Office. 6s. net). It appears that the number of births registered in 1933 was 580,413, giving a rate of 14.4 per 1,000 persons living. This rate is 0.9 below that for 1932, and constitutes a new low record. The death-rate was 12.3 per 1,000 persons living, 0.3 above the rate for 1932 (the same as that for 1931) but 0.9 above that for 1930. The deaths of children under one year of age numbered 64 per 1,000 live births against 65 in 1932, 66 in 1931 and 60 in 1930. Cancer showed a death-rate of 1,526 per million persons living against 1,510 in 1932. If, however, allowance is made for differences in the age constitution of the population, the comparative mortality from cancer shows a slight decrease. Tuberculosis again furnished a new low record of 824 per million living. Puerperal sepsis caused the deaths of 1.75 women per 1,000 live and still births, 0.20 more than the rate for 1932 but 0.09 less than 1930. The death rate from suicide was 140 per million persons living, a decrease of 3 per million on the record high rate of 1932. A slow increase in this rate had been continuous for a number of years. Road accidents due to mechanical vehicles were responsible for 5,934 deaths. The figures for the last five years were 5,196, 5,752, 6,342, 5,892 and 5,671 respectively.

#### Exhibition of Microscopes

THE second annual exhibition of microscopes and appliances, conducted by Messrs. W. Watson and Sons, Ltd., 313 High Holborn, London, W.C., which has been open all this week at the Central Hall, Westminster, attracted numerous visitors. A number of mounted specimens were shown on a series of microscopes ranged round the Hall, comprising diatoms, pollens, histological and pathological specimens, and crystals with polarised light. Members of the Quekett Microscopical Club arranged an interesting exhibit of living pond-life, including some beautiful specimens of *Volvox* and *Vorticella*. The use and value of the microscope in industry were demonstrated by exhibits illustrating the differences in microscopic structure of various qualities of leather, the size of sugar crystals, cocoa particles and entangled air bubbles as influencing the quality of sweets in confectionery, and the microscopic flora in cheese and in vinegar fermentation. A side-show of considerable interest was a demonstration of the making of the glass discs and their shaping, grinding and polishing so as to form the constituent lenses for microscope objectives. Other exhibits illustrated the detection of forgery and of crime weapons, and formed the subjects of two of the lantern lectures, by Mr. T. J. Ward and Major G. Burrard respectively, which have been a feature of the exhibition. Other lantern lectures included "A Naturalist on the Amazon" (Mr. Robins), "An Amateur among the Stars" (Mr. Offord), and "How Lenses are Made" (Mr. Watson Baker), together with several cinematograph displays by the Kodak Company.

#### Sound and Noise

A RESEARCH and Development Lecture on "Sound and Noise" was given at the Royal Institution on December 12, under the auspices of the Institution and the British Science Guild, by Dr. G. W. C. Kaye, Superintendent of the Physics Department at the National Physical Laboratory. Mr. Hore Belisha, the Minister of Transport, was in the chair. Man has developed very many and ingenious ways of making sounds and noises. In some everyday events the noise is only a small by-product; for example, only about a thousandth part of the energy of a dropped weight or of a hand-clap appears in the form of noise. This figure was increased to a few per cent in the case of motor horns and loud speakers, and even up to 30 per cent or more for the loud speakers used for talking pictures. By comparison with many sounds, the human voice is very weak, and even during shouting the output was only about 0.001 watt. Suitably equipped, an orchestra of 75 has a normal acoustic output of about 0.5 watt, which in strident passages may be increased 100-fold—quite enough, if it could be so applied, to light an average electric lamp.

FOR the purposes of the measurement of the loudness of noise, a reference standard of sound has been chosen, which consists of a pure note of a frequency of 1,000 cycles per second. The adjustable

intensity of the standard note is measured on a scale of decibels above an arbitrary zero near the threshold of hearing; the corresponding loudness is then expressed on a numerically identical scale of phons. The various subjective noise meters on the market determine the equivalent loudness of noises in phons by matching them by ear against the standard note. The objective meters, on the other hand, depend on the physical measurement of the intensity by a microphone; they can, however, be made to stimulate the ear and so compare the loudnesses of similar noises. The new acoustics laboratory at the National Physical Laboratory has greatly facilitated investigatory work on the steps required to reduce sources of noise, on the noise proofing of walls and on the noise absorption of building and other materials. The last line of defence against noise in a building is the use of surface absorbents. Ordinary hard plaster is a better reflector of sound than a mirror is of light, so that in modern rooms designedly free from curtains, upholstery and carpets, the noise level can become uncomfortably high unless one of the commercially available acoustic absorbents is applied to the walls or ceilings.

#### Experimental Hand-Rearing of Game Birds

ORNITHOLOGISTS and students of game birds have become increasingly interested in experiments in hand-rearing and introducing game birds to new areas, and what is believed to be the first ptarmigan (*Lagopus leucurus*) to hatch in captivity was from one of eighteen eggs collected by Dr. A. A. Allen, of the Department of Ornithology of Cornell University, near Churchill, Hudson Bay, and put under bantams at Ithaca (*Scientific American*, Nov. 1934). Science Service, of Washington, D.C., reports that a second batch of twenty ptarmigan eggs has been obtained from Canada and put under bantams, though several eggs have been broken by the foster mothers. During the present year, the first introduction, and hatching, of English pheasants (*Phasianus colchicus*) in Uganda was accomplished by the Agricultural Department at Kamala (T. W. Chorley, *Field*, Aug. 4, 1934). The eggs were obtained by Mr. T. W. Chorley, of the Agricultural Department in Uganda, from the Silverdale Game Farm, Lancashire, and arrived by air mail on May 3. Next day they were put under two native fowls, and three chicks hatched on May 27, and the remainder on May 28, 85 per cent of the imported pheasant eggs hatching. Unfortunately, two heavy storms broke out in the first three weeks, and several birds died, but the remainder did well.

#### Electricity on Board Ship

THE paper read by C. W. Saunders, H. W. Wilson and Dr. R. G. Jakeman to the Institution of Electrical Engineers on November 22 on the generation, distribution and use of electricity on board ship is a timely one. Although electricity was used in the British Navy for various purposes so far back as 1874, it is only since the advent of the Diesel engine that it has been largely used. To-day, almost all

auxiliary machinery—from the windlass in the bows, through the engine room and hull, to the steering gear in the stern—is electrically operated in important ships. In a 20,000 ton turbo-electric passenger liner, the propelling machinery, usually two turbo alternators, would be about 20,000 horse power and there would be usually four motors to which they send the power. In addition, there would be four main generators each of a 1,000 h.p. The steering gear requires 84 h.p., the capstan machines 536 h.p. and the boat davits 120 h.p. For the fans 500 h.p. is required and for the refrigeration 290 h.p. Compared with these numbers, the 31.5 h.p. required for the passenger lifts seems small. A modern liner is really a large floating hotel, and when at sea the travelling public demands a standard of comfort as high as that obtainable on the best hotels ashore. Consequently the most modern types of lighting, heating and cooking equipment are installed. The galley alone at times of maximum load may require 900 h.p. In the *Queen of Bermuda*, for example, there is one 450-line telephone board, 250 electric signs, 2,250 bell pushes, 400 electric radiators, 650 electric fans for cabins, 410 miles of conductors in cables and wires and 20,000 electric lamps. For very large ships it is generally agreed that turbo-electric drive is the most suitable at the present time.

#### De la Beche's "Researches in Theoretical Geology"

PUBLISHED in 1834, unpretentious in size and style (12mo.), De la Beche's work was especially welcome to the younger geologists of the time as a philosophical treatise, comprehensive and helpful in design. This little volume had an interesting preface explaining the author's position. It ran as follows:—"Although the theory of central heat and the former igneous fluidity of our planet have been much dwelt upon in the following pages, the author trusts that he will not be considered so attached to these views as not to be ready to reject them and embrace others which may afford a better explanation of an equal number of unobserved facts. . . . It can only be amid a thousand errors, and by a determination to abandon our preconceived opinions, when shown to be untenable, not by pertinaciously adhering to them . . . that we can approximate towards the truth. By strictly advocating a particular theory, prominently displaying those facts only which may appear to afford it support, we are in perpetual danger of deceiving ourselves and others." Finally—"We may conclude that whatever changes our planet may suffer, either from external or internal causes, and the necessary conditions exist, life will be created to suit those conditions; even after man, and the terrestrial animals and plants contemporaneous with him, may have ceased to live on the surface of the earth."

#### Proceedings of the Fifth Pacific Science Congress

It is hoped to publish very shortly the complete *Proceedings* of the Fifth Pacific Science Congress which was held at Victoria and Vancouver, Canada, in June 1933. The publication will be in five volumes: