

tricity in which the light quantum passes completely to matter, that is, the photon is annihilated. As one would expect from the author, wave mechanics is treated with great clearness and there is no attempt to represent the theory as having resolved all difficulties; on the contrary, at each partial success its incomplete nature is commented on and the requirements of a more complete solution are specified.

#### Egg Storage

A DESCRIPTION is given in the *Electrical Review* of September 15 of the Chelmsford Egg Supply Co. (1934). This company utilizes a process for the preservation of eggs which, it is claimed, keeps them fresh indefinitely. It is said that, if eggs are frozen below 28° F. they crack, so that storage by freezing is impracticable. Storage in gas is better, but it takes time for the gas to percolate through the shell. The company has, however, overcome this difficulty. Every egg has a small air space at the top. This increases as the egg ages. By means of a pump the air is extracted and replaced by carbon dioxide and nitrogen under a pressure of 250 mm., this pressure being maintained all the time the eggs are in storage. The eggs are stored in large cylinders each holding 234,000 eggs and are kept at a temperature of 30° F. Each refrigerating unit is driven by a 6 h.p. motor, and in addition, two extra motors are employed, 5 h.p. and 2.75 h.p. respectively, for circulating the water and ammonia. The gas-tight cylinders in which the eggs are stored look like large boilers. An additional chamber held at a much lower temperature is used for freezing liquid eggs, that is, those which have been accidentally cracked, and are sold to local bakeries. The factory is also a national mark packing station capable of dealing with a million and a half eggs a week. The electricity taken per annum from the public supply is nearly 60,000 units. As this load is very nearly constant, and is heaviest during the summer months, the load factor is excellent and an attractive tariff is available. The seasonal difference in the price of eggs practically makes up for the cost of storage.

#### Extensions of Carrier Telephone Systems

IN the quarterly edition (No. 17) of *Nippon Electrical Engineering*, published in English by the Institute of Electrical Communication Engineers of Japan, there is an important paper on carrier telephone systems which make use of lighting and power distribution lines. It is written by N. Shinohara, Y. Hirano and M. Yoshioka, and contains many useful experimental and theoretical results. They point out that the economies effected by using existing power and lighting circuits as part of the carrier system make it possible to extend communication to out-of-the-way districts, as, for example, farming districts, fishing villages, lighthouses, etc. This will make possible the rapid cultural development of these places. They consider first of all the use of high-tension distribution lines as part of the carrier frequency transmission circuit. In the past this has

been done by two systems; the first is called the metallic circuit system and the second the ground return circuit system. Although the first system excels the latter so far as low attenuation and noise are concerned, the second is the system which is more commonly employed owing to its greater economy and trustworthiness. The authors state that in utilizing the high-tension distribution line it is best to employ the ground return circuit system. The most commonly employed types of high-tension systems are the single-phase two-wire type and the three-phase three-wire type. The height of the wires above the ground is not uniform, but, where the line is even, the average height is about seven metres. By considering a single copper wire 5 mm. in diameter at a height of 7 metres above the ground and at a temperature of 20° C. and a frequency of 50 kc., they compute that the speed of the carrier waves is nearly equal to the speed of light and that the attenuation constant is very small. They conclude by describing a method of designing a circuit by a new telephone system which they state will be the most suitable for a rural district. They show how much more economical the new system would be than the one at present in use.

#### Oceanographical Results from Central America

IN July and August 1938, the President of the United States, the Honorable Franklin D. Roosevelt, undertook an inspection cruise and fishing expedition from San Diego, California, to Pensacola, Florida, by way of the Panama Canal, aboard the U.S.S. *Houston*. Between July 16 and August 9 some 5,888 miles were covered and fourteen different collecting stops were made, distributed among the possessions of five different nations: Mexico (Lower California and Socorro Island), France (Clipperton Island), Ecuador (the Galapagos Islands), Costa Rica (Cocos Island), and Colombia (Old Providence Island in the Caribbean). Dr. Waldo L. Schmitt of the United States National Museum accompanied the expedition as a naturalist. The results are published in a series of papers of which four are before us: "Decapod and Other Crustacea" (with Introduction and Data) (Smithsonian Miscellaneous Collections, 98, No. 6, Pub. 3531) by Waldo L. Schmitt; "Molluscs" (Pub. 3535) by Paul Bartsch and Harald Alfred Rehder; "A New Holothurian of the Genus *Thyone*" (Pub. 3537) by Elisabeth Deichmann; and "Two New Gobioid Fishes" by Isaac Ginsburg (Pub. 3539), May-June 1939. A number of new species of Mollusca are described, and lists of species given from the various collecting grounds.

#### Grass Drying

A REPORT on fodder conservation with special reference to grass drying by E. J. Roberts has been published by the Agricultural Research Council (H.M. Stationery Office. 2s.). This is the third report on the subject, and embodies the results of the most recent experiments carried out with the co-operation of agricultural organizers, colleges and experimental farms in Great Britain. A detailed account

of grass-drying machinery and equipment is given, and comparison made with the various processes of artificial drying in other countries. There seems to be little doubt that the conservation of young grass is sound in principle, as it is then at its maximum nutritive value, and feeding trials show that it can largely replace concentrates. The question of the profitability of grass-drying, however, cannot be answered so simply, as it depends both on the quality of the product and also on other matters such as the market value of the concentrates which it is to substitute, and whether the grass would have been utilized in some other manner or wasted through occurring at a time of surplus growth. The indirect advantages of the process, such as improvement of the sward, control of thistle, etc., must not be overlooked, nor the fact that the lower grades of dried grass are of higher value than the best hay. Profit-making, however, in this as in many farming enterprises, depends to a very large extent on the skill of the individual.

#### Agricultural Libraries

THE International Institute of Agriculture in Rome has just published a useful book of reference entitled "International Directory of Agricultural Libraries" (25 lira). The information consists of a list of all general agricultural libraries of more than two thousand volumes, libraries specialized in particular subjects, agricultural collections in general libraries, and centres of agricultural documentation. So far as possible, the history and size of the library and the subjects represented therein, the cataloguing and classification systems employed and regulations for the use of the library are stated. Relations with other libraries (exchange of publications, etc.), a bibliography of writings on the library and any publications edited by it are also mentioned. 1,200 libraries arranged according to country are described, and the text is written in both English and French.

#### Theodor Langhans (1839-1915)

THEODOR LANGHANS, an eminent German pathologist, who with the physician Sahli and the surgeon Kocher formed a triumvirate which made the Berne medical school famous, was born at Usingen, Nassau, on September 28, 1839. He received his medical education at Heidelberg; Göttingen, where he was a pupil of the celebrated anatomist Henle; Berlin, where he studied under Virchow, Trauber and Frerichs; and Würzburg, where he qualified in 1864 with a thesis on the structure of tendons and served as assistant to von Recklinghausen until 1867. He then went to Marburg, where he collaborated with Lieberkühn and Wagner in anatomical research. In 1868 he described the giant cells in tubercle to which his name has been given, and it was during his stay in Marburg that he carried out some important investigations on the absorption of extravasations and the formation of pigment. In 1872 he was appointed professor of morbid anatomy at Giessen, but in the same year succeeded Klebs in the corresponding chair

at Berne, where he did valuable work on the morbid histology of the female breast, the histology of the placenta, the distribution of glycogen in normal and diseased organs, and described the cellular layer of the chorionic epithelium to which his name has been given. He also collaborated with Kocher in a study of diseases of the testicle. His later years were mainly devoted to researches on the morbid anatomy of goitre and cretinism. He retired from his chair two years before death, which took place on October 22, 1915.

#### Announcements

WE have been asked to state that the Geological Society of London is carrying on as usual at Burlington House. An announcement relating to meetings will be made in due course.

THE annual exhibition of the Royal Photographic Society is being held at the Society's House, 16 Prince's Gate, South Kensington. The exhibition is open from 10 a.m. until 5 p.m. daily (Sundays excepted) until October 7.

MR. JOHN RYMILL, the arctic and antarctic explorer, has been awarded the David Livingstone Centenary Gold Medal of the American Geographical Society in recognition of his leadership of the Graham Land Expedition. Mr. Rymill, who is an Australian, was a member of the British Arctic Air Route Expedition to Greenland in 1930-31, and took over the leadership when Mr. H. G. Watkins was lost. He led the Graham Land Expedition to the Antarctic in 1934.

THE Council of the Institution of Naval Architects has awarded the Martell scholarship in naval architecture (1939) to Mr. Norman W. Honey, of H.M. Dockyard, Sheerness; the scholarship is of the value of £130 per annum, and will be held at the Royal Naval College, Greenwich. The Earl of Durham Prize has been awarded to Mr. Peter E. Bish, of H.M. Dockyard, Devonport.

WE have received from the British Drug Houses, Ltd. (Graham Street, London, W.1.) the new catalogue of B.D.H. laboratory chemicals and testing outfits, which comprises nearly six thousand separate items and is provided with a general index. Section 1 has been enlarged by more than five hundred new items, mostly organic chemicals, and Section 2 contains an increased number of reagents and solutions for analytical and clinical purposes, and there is a new section of culture media. The products listed are normally held in stock for immediate delivery.

DR. ALBERT B. SABIN of the Rockefeller Institute of Medical Research has received the Theobald Smith award of 1,000 dollars from the American Association for the Advancement of Science in recognition of his rapid method of typing in pneumonia and for a quick bedside test of a patient's probable resistance to the disease.