

pressure steam engines. In 1804 the authorities at Philadelphia commissioned him to construct a steam dredging machine which, because it could propel itself on land and in the water, Evans called the *Orukter Amphibolos*. Evans died, a disappointed man, in 1819. Before his death he destroyed a lot of drawings, and with them probably was lost the sketches of his dredger, the details of which to-day are very imperfectly known.

A Vitamin A Concentrate of High Blue Value

IN *Science* of March 16, p. 255, Prof. H. N. Holmes, in association with H. Cassidy, E. Hartzler and R. Manly, reports the preparation of a concentrate of vitamin A having a blue value of 144,000, that is, 14,400 times greater than the blue value of an average good medicinal cod liver oil. The starting material was the non-saponifiable fraction of halibut liver oil. This was chilled in methyl alcohol solution, to freeze out cholesterol, etc., filtered cold under nitrogen, transferred to pentane by addition of water, dried over anhydrous sodium sulphate and then, in pentane solution, cooled to about -70°C . with the aid of carbon dioxide snow mixed with alcohol and again filtered, with careful exclusion of oxygen. The cold pentane solution was next filtered through a Tswett column of very specially prepared carbon and washed completely through with pure pentane. The product obtained was a pale yellow viscous oil; different preparations showed blue values ranging from 105,000 to 144,000. The authors have not yet had time to analyse their concentrate or determine its molecular weight, spectral absorption bands, extinction coefficient or biological potency. Further reports of their work will be awaited with interest.

Recent Acquisitions at the Natural History Museum

AMONGST recent accessions to the Zoological Department of the British Museum (Natural History) is a valuable collection of mammals, including a large series of duikers and some specimens of the giant forest hog, which has been received from Mr. G. Foster, assistant game warden of Uganda. A small collection of important Russian mammals, which has been received in exchange from the Moscow Museum, contains specimens of *Dipus*, *Spalax*, *Citellus*, *Ochotona*, *Alactagulus*, and *Cricetulus*. As a gift from the trustees of the estate of the late Mrs. Mary Joicey, the Department of Entomology has received the most valuable present of butterflies and moths to reach it since the War. The collection comprises more than 300,000 specimens and includes the types of 3,000, descriptions of which were published in the main in the *Bulletin of the Hill Museum*. During his life-time, the late J. J. Joicey probably did more to stimulate the study of butterflies and moths, especially those of Africa, than any other private individual in Great Britain. The Department of Geology has received the skull of a child, about six years old, of the extinct Neanderthal race, discovered by Miss Garrod in 1926 in a cave near the Devil's Tower, Gibraltar.

In the Department of Mineralogy 474 individual masses of meteoric iron with a total weight of $165\frac{1}{2}$ lb.,

from the meteorite craters at Henbury, Central Australia, have been received by exchange from the Kyancutta Museum, South Australia. The larger masses weigh $46\frac{1}{2}$ lb., $25\frac{1}{2}$ lb. and $24\frac{1}{2}$ lb., the majority are small twisted pieces (meteoric shrapnel) torn from the main masses by the force of the explosions that made the craters. This completes a unique display of 1,000 lb. of material collected from the Henbury craters. Large blocks of long-fibre satin-spar (gypsum) from East Bridgford, Nottinghamshire, have been presented by Mrs. A. Coville. This material is exported to the United States for the fashioning of small fancy articles, which are sold at Niagara Falls, the material being stated to come from under the Falls. This export resulted from an inquiry from the United States made to the Museum about twenty years ago. Mr. W. C. Barton has presented to the Department of Botany about 8,500 sheets of flowering plants. The remainder of his herbarium will be handed over shortly. The present instalment includes the genus *Hieracium* and the families Ranunculaceæ to Rosaceæ with the exception of the genus *Rosa*, which was presented some years ago, and the genus *Rubus*, on which the donor is specialising in collaboration with the Rev. H. J. Riddesell. The herbarium includes those of H. J. Riddesell and Mrs. Foord Kelsey; the first, which is large, is particularly rich in Gloucestershire and South Wales, and the second in Berkshire, plants. The first portion of the lichen herbarium of Mr. D. A. Jones has been purchased. This includes nine hundred British specimens and five hundred European. Many of the British specimens are those on which records are based, and the collection supplements the very extensive Museum collections. Among the purchases is a set of 149 flowering plants from Galapagos Islands collected by H. J. F. Schimpff.

British Polar Year Expedition, 1932-33

THE Symons Lecture of the Royal Meteorological Society was given on March 21 by Mr. J. M. Stagg, who spoke on "The British Polar Year Expedition, Fort Rae, Canada, 1932-33". The activities during the International Polar Year 1932-33 really constituted a jubilee repetition on a more extensive and intensive basis of a co-operative scheme of observational work in meteorological and allied sciences so fruitfully carried out by fifteen countries during the First Polar Year. As in that year, 1882-83, part of Britain's share in the new international effort consisted in equipping and maintaining a station at Fort Rae, a trading outpost of the Hudson's Bay Company on the Great Slave Lake, north-west Canada. The programme of work of the party of six, who remained at Rae from July 1932 until September 1933, consisted primarily in obtaining as complete records as possible of the main elements in meteorology, terrestrial magnetism, aurora and atmospheric electricity; and the proximity of Fort Rae to the zone of maximum auroral frequency around the polar cap made the auroral investigations specially important. Methods of parallax photography were employed to determine the precise position of the aurora in space. The information brought back will be studied

in conjunction with similar data gathered by the forty-six other co-operating countries with the view of obtaining fuller insight into the synchronous large-scale events in meteorology, magnetism and aurora, over the earth and in the atmosphere up and into the conducting layers. A large amount of material is also available for the study of the interrelationships among the varied phenomena observed and recorded during the year's activities.

The New Coast-line of Antarctica

FURTHER information has come to hand concerning Consul L. Christensen's discoveries in the Antarctic referred to in NATURE of March 17, p. 409. Princess Astrid Land, as it was named, is now reported in the *Times* to lie in about long. 86° 45' E. and a little south of the Antarctic Circle. This is to the west of and adjoining Kaiser Wilhelm Land, discovered by Dr. E. von Drygalski in 1902, and east of Princess Elizabeth Land, discovered by Sir Douglas Mawson in 1931. The land was sighted from an aeroplane from a distance and reported to rise for a distance of about 150 miles. It is further reported that the Douglas Islands, off MacRobertson Land, do not exist. Consul Christensen then took the *Thorshavn* eastward and reports that in lat. 71° 44' S., long. 134° 11' E. (? W.) his seaplane could find no land to the south. Proceeding via Peter Island, the ship rounded Cape Horn, discovering a new bank to the south, and made for Montevideo. A number of soundings were taken in hitherto uncharted waters.

Early Science in Poland

A STUDY of the development and position of science in Poland up to the end of the sixteenth century is given by Prof. Kazimierz Dobrowolski in the recent issue of *Nauka Polska* (vol. 17; 1933), an annual publication devoted to the organisation and progress of science in Poland. Prof. Dobrowolski's account (132 pages) of Poland's contributions to early science is especially detailed for the sixteenth century itself and is well documented throughout. It refers not only to the natural sciences, so far as they had then developed, but includes also incursions into theology, philosophy, logic, law and history. It is evident that 'science' as understood in Poland, and in Europe generally for that matter, up to the seventeenth century was closely associated with alchemy, astrology and occult practices. But towards the close of the period under review, Prof. Dobrowolski points out that real scientific inquiries were being prosecuted in Polish centres of learning, so far as political upheavals permitted. The work of Copernicus is not only important in itself but also because it was followed by that of Francis Bacon, Galileo, Descartes and others. Early English and French contributions to scientific knowledge, for example, Roger Bacon's discoveries and writings and those attributed to Thomas Aquinas, had reached Poland and exerted some influence upon thought there. The same volume of *Nauka Polska* contains some notes by Dr. M. Wolfke on certain recent developments in pure and applied physics and another contributor describes life in scientific circles at Lodz.

High-Voltage Testing Equipment

ECONOMICAL considerations are leading electrical engineers to use very high voltages for transmitting electrical energy over long distances. The accessories used with high-voltage cables or overhead lines require to be specially tested. This has made it necessary to build high-voltage laboratories and to design insulating devices which will withstand these high pressures. In the early days of testing, the perfection of a testing set was judged mainly by the length and appearance of the spark and the loudness of the noise it made. Nowadays these measurements have to be made with high accuracy in accordance with stringent specifications. On the result of the acceptance tests, errors of a few per cent may turn the scale for rejection, leading to losses of thousands of pounds to the manufacturer. In certain cases discrepancies of ten per cent are shown in the results obtained in different laboratories, leading to considerable dissatisfaction.

In a paper on high-voltage testing read on December 21 to the Institution of Electrical Engineers by B. L. Goodlet, of the Metropolitan Vickers Electrical Co., Ltd., it is shown that the discrepancies are mainly due to badly designed equipment and insufficient knowledge of the performance of the testing set under various conditions. They also arise sometimes from differences in the technique used in testing. Single units for testing purposes are usually built for a million volts, but it is often more advantageous to utilise the well-known cascade connexion which produces the required total voltage by adding up the individual voltages of several smaller units. The high voltage and low power rating of these transformers lead to difficulties in designing them. The authors illustrate this by showing oscillographic records of the distorted wave forms of the current and voltage sometimes obtained. In the third part of the paper a complete mathematical and experimental discussion is given of the impulse generator.

Economic Survey of Agriculture in the East of England

AN excellent economic survey, the second of the series, based on a sample of more than a thousand farms, has recently been published (University of Cambridge: Department of Agriculture, Farm Economics Branch. Report No. 21: "An Economic Survey of Agriculture in the Eastern Counties of England, 1932". Pp. vi + 89. Cambridge: School of Agriculture, 1933. 2s. 6d. net). As a record of what is actually happening to the individual units of agriculture in the eastern counties of England, it could scarcely be bettered. Reality is an excellent antidote to indiscriminate theorising in any subject; surveys such as this enable the hard facts of an industry of small units like agriculture to be ascertained. Without a factual basis of this type there can be no sound future planning or adequate criticism of past planning.

THE broad facts revealed by the survey are sufficiently disquieting. The depression of agriculture