

to be cultivated co-operatively by a group of men. They receive no remuneration for their work other than coupons signed by Prof. Scott according to the time spent on work. These coupons are equivalent in value to half a pound of potatoes, and can also be exchanged for knitted socks made by a member or for boot repairs undertaken by another member. Later on, it is hoped to extend the variety of goods and services obtainable for the coupons. At Petersfield the system is further developed and the work undertaken by various members includes cultivation of allotments, poultry farming, wood cutting, cobbling, carpentry and general repairs. To break up the land, a tractor has been borrowed from a local firm. The commodities or services are exchanged among the members while surplus farm produce is sent to an occupation centre in exchange for surplus clothes made in the centre.

Gutta Percha, Balata and Caoutchouc

PROF. G. G. HENDERSON, in delivering the twenty-sixth Bedson Lecture in Newcastle-upon-Tyne on May 18, outlined the work carried out in his laboratories on the subjects of gutta percha, balata and caoutchouc. The peculiar difficulties of the subject—which he advised research workers to avoid—are the lack of criteria of purity, complete absence of crystalline compounds, ready resinification at temperatures above 40°, and attack by air. Oxidation experiments with hydrogen peroxide yielded alcoholic substances in each case, which when treated successively with acetic anhydride, further peroxide and aqueous barium hydroxide gave, from each source, so far as could be determined, the same final alcoholic product. Hydrogenation with a palladium catalyst gave results in agreement with the general formulæ $(C_5H_8)_x \rightarrow (C_5H_{10})_x$ with the anticipated increase in stability. This is in agreement with the general conception of chains of isoprene units linked head to tail with loss of one double bond per unit. The hydrochlorides of these substances on treatment with metallic zinc gave, not the same dihydrides, but quite different substances with the original empirical formula but one unsaturated linkage to each two isoprene units, which may be due to cyclisation on loss of hydrogen chloride. Finally, the dibromo addition compounds condensed with phenols in the presence of anhydrous ferric chloride to yield coloured substances with the properties of indicators, one being very suitable for the titration of halides with silver nitrate.

Marine Electrification

SEVERAL important developments in connexion with marine electrification are described in the *G.E.C. Journal* of February. In the past, fishing trawlers have been illuminated by means of carbide lamps which, apart from their disadvantages from an illuminating point of view, introduce a serious fire risk. Special equipment has now been designed and installed on one of the trawlers of a Scottish fishing fleet which enables electric lighting to be used. The installation has been very successful and the practice of electrically floodlighting the decks of

trawlers will be widely used. The Company also completed the electrical propulsion equipment of the Diesel-electric tug, *Acklam Cross*. This is the first British vessel of her type, the first to have high-speed Diesel prime movers, the first to have a clear after deck, and the first to have an electrical system of starting the prime movers. The system adopted seems admirably suited to fulfil all the special requirements of a tug. It is capable of going on duty at a moment's notice. It is also capable of rapid manoeuvring when towing large vessels in and out of congested harbours. There is practically no delay in exerting full power ahead or astern. The Diesel-electric engine can be started up as quickly as a motor-car engine and during periods of inactivity no fuel at all is consumed. The control of the speed and the direction of the controller is directly in the hands of the navigating officer. Starting is effected immediately by pressing a button. The mean speed over the measured mile was 11.15 knots. The time taken from rest to full speed ahead was 24 seconds and from stop to full astern was 16 seconds. The electro-hydraulic steering gear was very efficient, the vessel being capable of turning at full speed in under two lengths.

Research Activities of the Mellon Institute

THE twenty-first annual report of the Director of the Mellon Institute, covering the year 1933-34, directs attention to the improvement in the position of research during recent months and illustrates the wide range of industries which benefit from the activities of the Institute. Sixty-six industrial fellowships were in operation during the year, requiring the services of 101 fellows and 34 assistants, and fifty-five fellowships were in operation at the end of the year. Fellows and assistants then numbered 104 as against 98 in the previous year; new fellowships commencing operations during the year dealt with cosmetics, nitrogen compounds, calgonising, rayon, new plastics, phosphates, tar acids, textile finishing, etc. The calgonising fellowship is concerned with the properties and utility of sodium metaphosphate ('calgon') in textile and laundry technology, the fellowship on phosphates is occupied with their pharmacology and therapeutic value, and a fellowship to investigate problems in starch technology has recently been accepted. The discovery of a process for flaking coffee by the application of high pressure to ground freshly roasted coffee made in a study of the packing of coffee is claimed as an important technical and practical advance. Other investigations have led to the marketing of new and improved strained foods. Industrial applications of the newer organic solvents have been assisted and a new water-soluble lubricant has been introduced for worsteds and wool. New plasticisers, new types of resins, adhesives which do not cause discoloration of envelopes on sealing, the synthesis of new types of amines, are among other achievements of the Institute, which can also point to important investigations on steel, the development of novel building materials, studies on heat insulation and efforts at smoke abatement as other evidence of its importance

to the general welfare. The fellows of the pure chemistry department have completed a number of important investigations on quinine, the cinchona alkaloids, etc., while the Institute has also supported investigations on pneumonia and pulmonary diseases at the Western Pennsylvania Hospital.

Aquarist and Pond Keeper

THE sixth volume of the *Aquarist and Pond Keeper*, which opens with the March-April issue, has a change of cover, a new headpiece and other improvements in printing and illustrations. The magazine keeps up its character in every way, and is full of information for those who are fond of aquaria, vivaria and pond culture. The articles in the present number include the first of a new series by Arthur Denham on the keeping, breeding and rearing of tropical fishes, and aquarium notes by E. G. Boulenger, director of the Zoological Society's aquarium, and by S. W. Weller, curator of the Brighton Aquarium. An angler fish or 'fishing frog' more than three feet in length, said to be the finest specimen of its kind ever exhibited alive, has been acquired for the Brighton Aquarium. It will be interesting to see how long it lives, for this species is notoriously difficult to keep in confinement, especially those of such a large size.

The Merseyside Aquarium Society

ONE of the most extensive collections of British fresh-water aquaria and aquatic and river-side vegetation, in addition to foreign aquaria, has lately been brought together by the Merseyside Aquarium Society at its aquarium at Cliff House, Wallasey, which was opened by the Mayor of Wallasey in March 1932. The collection, which now comprises some sixty tanks, is claimed to be the most extensive of its kind in the North of England, and situated in extensive glass-houses, is largely the result of much hard work by enthusiasts in all classes of life in an effort to establish a really efficient scientific and public aquarium on Merseyside. The Merseyside Aquarium Society was instituted in 1926, largely through the efforts of Mr. F. Jefferies, a past president of the Liverpool Naturalists' Field Club, and incorporated in 1930, and its first president was the late Prof. James Johnstone. The president of the Society is Alderman A. H. Evans of Wallasey, the vice-presidents Prof. J. H. Orton, professor of zoology in the University of Liverpool, W. S. Laverock, lately of the Liverpool Museums, and Alderman D. R. Charlesworth, ex-mayor of Wallasey, and the honorary secretary, Mr. F. Jefferies. By a system of exchange, the Cliff Aquarium has acquired a number of valuable exhibits from the New York Aquarium Society, and it has lately been successful in breeding and rearing the axolotl (*Amblystoma*) to maturity. The present premises have been loaned the Society by the Wallasey Corporation, but the Aquarium is only considered a nucleus for a much larger building which it is hoped to have built as a municipal affair in the future. The Society issues a volume of *Proceedings*, holds six indoor meetings

annually, and affords special help for the amateur aquarists, for the exchange of knowledge and experience amongst experts, and to promote school aquaria and vivaria.

Advances in Oceanographical Research

THE great and growing importance of fundamental research in marine biology and oceanography has recently been emphasised by the launch of two new vessels specially ordered and designed for this work. On September 23, 1933, a new French research vessel, the *Président-Théodore-Tissier*, left the builder's yard. This ship, built to the order of L'Office Scientifique et Technique des Pêches Maritimes de France, is approximately 160 ft. in length, fitted with up-to-date Diesel engines capable of producing a maximum speed of 11 knots, and fully equipped with all the latest apparatus for both oceanographical and biological researches. The *Président-Théodore-Tissier* has now completed her trials and is already in commission. A few months before the launch of the French vessel, the Danish Biological Station, Copenhagen, took over from the builders the new research ship *Biologen* (Report of the Danish Biological Station to the Ministry of Shipping and Fisheries, 38, 1933. Copenhagen: C. A. Reitzel). Though considerably smaller than the *Président-Théodore-Tissier*, the Danish vessel is also fully equipped for carrying out scientific work in both narrow and high seas. In view of the acquisition of these two highly efficient modern research vessels by foreign powers, it is all the more regrettable that H.M.S. *Challenger*, originally destined for similar work by Great Britain, should have had to be given over to other purposes, and the activities of our existing ships seriously curtailed.

A Potato Research Station

THE establishment of such a station in one of the important potato-growing districts is advocated by Sir John Russell in the foreword to the report of the sixteenth Rothamsted Conference, upon "Problems of Potato Growing" (Harpden: Rothamsted Experimental Station, 2s.). Sir John concludes that economical production of potatoes necessitates the use of good seed of the most suitable varieties, appropriate schemes of manuring and cultivation, control of insect and fungus pests and of other agencies causing disease, and methods for dealing with excess produce. All these topics are dealt with by expert contributors in this report. The fields of research developed around this homely plant, notably the virus disease problems, show how technical and specialised are the problems raised by this crop, and though the present research and advisory system deals very effectively with them to a point, Sir John concludes that there is room for such a special research station continuously concerned with investigations into the physiology of the potato and the utilisation of the tuber.

Research Regulations in Germany

THE April number of the *Fight Against Disease*, the quarterly journal of the Research Defence Society,