The original Trust in London was founded by Sir Otto Beit as a memorial to his brother, Alfred Beit, a colleague of Cecil Rhodes in his great plans for the future of British South Africa. The names of both these brothers, members of a German family from Hamburg who later received British naturalization, will live in their benefactions for the advantage of the Empire. Mr. Alfred Beit left large sums for South African universities, and also founded a trust for the development of communications in South and Central Africa. This trust has been of material assistance in the development of Rhodesia. Empire Day, 1939, saw the opening of a great bridge 500 yards long over the Zambezi, north-west of Salisbury and joining the two Rhodesias. The gift of this "Otto Beit Bridge" costing £180,000 came ten years after the building of the "Alfred Beit Bridge" at a cost of £130,000 over the Limpopo farther south; and much besides has been granted by this trust for other bridges, for education, school buildings, maternity homes, and other social services.

The Beit Trust for Medical Research, which is established in London, cannot afford such material evidence of its benefits, though actually a total of nearly £190,000 has been disbursed in fellowships since 1910. But the foregoing summary of the positions now held by past Beit fellows, men and women drawn from all parts of the Empire, shows how great and widely spread have been the intellectual gains through these fellowships. They have enabled men to live for three or four years whole-heartedly in an environment of research and by so doing to learn to devote the rest of their lives to scientific thought.

All correspondence of fellows and candidates should be addressed to Prof. T. R. Elliott, Honorary Secretary, Beit Memorial Fellowships, University College Hospital Medical School, University Street, London, W.C.1.

The following elections to new fellowships were made:

Fourth Year Fellowships (£500 a year): Dr. I. Berenblum, to continue his work on the production of cancer by skin irritants, and to study the metabolism of living cells in tissue culture (School of Pathology, University of Oxford); T. A. H. Munro, to continue his studies of the role of inheritance in mental disorders (Royal Eastern Counties Institution, Colchester); Dr. A. Neuberger, to extend his work on the chemistry of amino-sugars in elucidation of the structure of natural compounds (Department of Pathological Chemistry, University College Hospital Medical School, University of London); Dr. R. J. Pumphrey, to continue his studies on the nervous system of cephalopods and on the auditory processes in insects (Zoological Laboratory, University of Cambridge, and the laboratory of the Marine Biological Association, Plymouth).

Junior Fellowships (£400 a year): Dr. V. H. Booth, for research on (1) the internal constituents of bacteria by means of a wet-crushing mill, (2) carbonic anhydrase (Physiological Laboratory, University of Cambridge); E. G. L. Bywaters, for research on rheumatoid arthritis (British Postgraduate Medical School, University of London); Dr. W. I. Card, for research on the inhibition of gastric motility and secretion by experimental studies on man (Medical Unit Laboratories and Sherrington School of Physiology, St. Thomas's Hospital Medical School, University of London); Dr. Hans Heller, for research on the antidiuretic principle of post-pituitary extract (Medical Unit Laboratories, University College Hospital Medical School, University of London); Dr. M. S. Jones, for investigations on insulin treatment of schizophrenic mental states (Maudsley Hospital, Denmark Hill, University of London); Dr. B. Levin, to investigate the effect of spatial configuration of antigens on immunological reactions (Clinical Chemical Laboratories, London Hospital, University of London); I. Mackenzie, for immunological investigations on constituents of tumours (Department of Surgical Research, University of Edinburgh); Dr. A. F. Rawdon-Smith, for research on congenital deafness (Physiological Laboratory, University of Cambridge); Dr. B. R. Record, to investigate the specific soluble substance found in the tissues in acute vaccinial infection (Lister Institute of Preventive Medicine, University of London).

TRENDS OF PROGRESS IN TECHNICAL CHEMISTRY

THE annual meeting of the Society of Chemical Industry, held at Exeter on July 10–15 under the presidency of Dr. V. G. Bartrow, the eminent Canadian industrial chemist, was noteworthy for a symposium on "The Trend of Progress" to which important papers on various subjects in the field of chemical technology were contributed (*J. Soc. Chem. Ind.*, 58, 587, 613, 635; 1939).

P. W. Tainsh (chief chemist to Lever Bros., and Unilever, Ltd.) reported on progress in oils, fats (other than edible) and detergents, pointing out that during the last twenty years important advances have been made in the methods of treating oils and fats to render them suitable for soap-making, and in particular bleaching and hydrogenation processes have been remarkably improved. The main development in connexion with the technical bleaching of oils has been in the application of activated bleaching earths. At one time the bleaching of oils was mainly carried out with natural earth, such as fuller's earth, and with this the bleaching effect obtained with an oil such as palm oil, for example, was strictly limited. Activated earths are obtained by treating the natural earths with hydrochloric or sulphuric acid and washing the earth down to a limited free-acid content. Tallow is still bleached for soap-making purposes by treatment with activated carbon after neutralization.

The progress made in technical hydrogenation during the last ten or fifteen years has been of great benefit to the soap-maker, and the hardened product may be so controlled that suitable artificial fats may be obtained from such materials as whale oil and fish oils which are equal in all respects, and for some purposes superior, to tallow. The use of preservatives in preventing oxidation has been developed. Improvements in soap-making, drying and milling soap, the production of soap powders and soap products, are recorded. One of the latest developments is that of the so-called soapless detergents. Normal soaps are sodium and potassium salts of long-chain carboxylic acids. In soapless detergents the long hydrocarbon chain is retained, but by the introduction of a variety of solubilizing groups other than the simple carboxyl group, products are obtained which are not affected by hard water. Such products are sulphated higher alcohols (C_{12} to C_{18}), condensation products of fatty acids with isethionic acid, products of interaction of satty acid chlorides and methyl taurine, and of the fulphonation of the product from high molecular weight phenols and ethylene oxide. Many of these products are in industrial use, although for general purposes it would appear that the newer detergents are still inferior to soap.

The trend of progress in cosmetics was reported by H. S. Redgrove. Titanium oxide may replace zinc oxide as a white face-powder. Lake colours and synthetic iron oxides are used for tinting, cellulose nitrate nail enamel has replaced wax and powder polishes. Other topics dealt with included hair dyes and creams, shampoos (including soapless products) and face creams.

The cellulose industry, with special reference to the paper and allied industries, was dealt with by J. Grant (chief chemist to J. Dickinson and Co.). Cellulose derived from wood takes the first place among the raw materials, although esparto grass is widely used in Great Britain for printing papers. Originally, three main processes were used for producing wood pulp: the acid process (sulphite pulp), the alkaline process (kraft pulps), and the mechanical process (for newsprint). The paper manufacturer is now met in competition in the pulp market by the makers of rayon (artificial silk), plastics and explosives. Other types of wood are now being investigated, and in Germany the exploitation of beech wood has been fostered by a nationalistic policy and is now reaching considerable proportions, and esparto from Italian North Africa is now being exploited in Italy, where sunflower stalks, hemp stalks and straw are also making the country largely independent of outside supplies. A combination of the two previously separated processes of isolation and bleaching is now occupying the cellulose industry, one process being chlorination with elementary chlorine. This enables fibres to be used which were previously unsuitable for paper pulp. A process still undeveloped commercially is the extraction of impurities from mildly processed raw material by means of organic solvents.

The cellulose textile industry was discussed by H. A. Thomas (of Messrs. Courtaulds, Droylsden) under the headings of production, dyeing, finishing and testing. Various modifications in the properties of the viscose fibre are possible in new processes, some varieties, for example, being suitable for motor tyre cords, which have to withstand temperatures in the region of 100°, and also the fibres imitating wool. Modifications in the acetylation of cellulose for the production of acetate rayon include the use of special solvents which are miscible with the esterifying agents, but prevent dissolution of the cellulose ester. In the dyeing section, an important trend is the production of coloured yarn by the incorporation of insoluble pigments in a finely dispersed form in the rayon spinning mass, a process known as spin-dyeing. This is overcoming the difficulty of producing fast shades on acetate rayon. Suitable pigments are carbon black and organic fast pigments. In the finishing section, the use of crease-resisting finishes by suitable impregnation of the fabric with solutions which on heat treatment produce a resin or polymer *in situ*, is extending. The technique of stiffening fabrics by employing cellulose esters or ethers, either as an interlayer or as woven threads, which are then plasticized and hardened, is used for semi-stiff shirt collars and cuffs. Viscose staple fibre is finding an increased use in the cotton trade.

In a paper on insecticides by J. T. Martin and F. Tattersfield (of Rothamsted Experimental Station) it is pointed out that the use of these materials has very greatly increased in recent years. The older products are still of great importance, although the supremacy of some has been challenged. Among stomach poison insecticides, lead arsenate has so far withstood all attempts to replace it. Of the many hundreds of synthetic compounds tested, phenothiazine (thiodiphenylamine) has aroused the greatest interest; among other things it is a potent poison for the mosquito larva. Nicotine bentonite is effective against codling-moth. The use of glycero-borates as a dressing in the treatment of blow-fly on sheep has given very satisfactory results. The application of various fluorine derivatives, including sodium silicofluoride, as moth proofing of fabrics gives satisfactory results. Among contact insecticides, nicotine, rotenone-containing plants, pyrethrum, quassia and petroleum are predominant, and recent progress is mostly concerned with their chemistry, mode of application and range of utility. The development of winter washes as ovicides has been a marked feature of the last twenty years. Experiments indicate that some insect pests can become highly resistant to the toxic substances used in their extermination.

Fungicides are reported upon by H. Martin (Research Station, Long Ashton, Bristol). Attention has been given to the factors affecting the efficiency of fungicidal treatments, such as the amount of fungicide retained on the treated plant or seed. This is connected with the wetting properties of the spray. Instead of water, a carrier of the active spray ingredient may be a liquid of low surface tension exhibiting low contact angles, such as kerosene and aqueous solutions of surface-active materials. Another promising method is to dissolve the active constituent in an oil and then emulsify this in an aqueous phase; an example is a nicotine-cottonseed oil-Bordeaux spray. The number of established active constituents of fungicides is limited to sulphur, copper, mercury, formaldehyde, and a few less widely used materials, and recent experimental work has modified generally accepted views of the action of these.

The paper of Sir John Russell (director of the Rothamsted Experimental Station) on crop production dealt with new crops, such as sugar beet, mechanization, increasing grass land, and the fertility of British soils. Sir John finds no evidence for the deterioration of British soils. The effects of small quantities of boron, manganese, copper and zinc in plant nutrition is now recognized, and other elements such as cobalt, molybdenum, selenium, fluorine and iodine in appropriate quantities considerably influence the nutritive value of the crop and animals. The question of the effect of reduced production of farmyard manure on soil fertility is answered by the statement that there is no evidence that it has lowered the fertility of British soils; there has been a corresponding shrinkage in area of arable land, and the grassland which has replaced it does not need farmyard manure.