

### Pascal's Arithmometer

At a well-attended meeting of the Newcomen Society held in the rooms of the Royal Society on February 16, Mr. R. Nilsson gave a paper entitled "The Pascal Arithmometer and Other Means to Solve Mathematical Problems". The audience included many distinguished foreigners. Premising that accuracy in calculation is one of the most important elements in scientific progress, Mr. Nilsson said that by a calculating machine is understood a great number of working parts conjoined in action by various mechanisms to obtain arithmetical or algebraic results. Describing in detail, with the use of slides, the arithmometer invented by Blaise Pascal (1623-62) when a youth of nineteen, the author said that Pascal's basic invention was the 'ten-carry-over' which is seen in the counters, meters, cash registers, etc., which are part and parcel of our daily life. Two years were occupied in making the first machine, and more than fifty models were constructed before the machine was in working order. Pascal showed it in 1647 to Descartes and in 1649 to Chancellor Séguier, who helped him to obtain a patent. Mr. Nilsson mentioned the machines which succeeded Pascal's; Sir Samuel Morland's (1666), that of Leibniz (1672), and those of Grillet, Poleni and Charles Xavier Thomas, of Colmar, Alsace, who began the manufacture of calculating machines. In the ante-room was a representative exhibition of machines and documents. In proposing a vote of thanks to the Royal Society for its hospitality, the chairman, Eng. Captain E. C. Smith, said that there could be no more suitable place for the gathering. Pascal was associated with some of the French men of science whose meetings led to the founding of the French Academy of Sciences, and his death coincided with the grant of the Act of Incorporation to the Royal Society.

### Ankara University : Opening of Faculty of Science

A NEW Faculty of Science in the University of Ankara was opened on November 8, 1943, in the presence of President İnönü. The President, accompanied by the Prime Minister, Sükrü Saracoglu, was welcomed at the inauguration ceremony by the chairman of the National Assembly, B. B. Abdülhalik Renda. All the members of the Cabinet were present; Mr. R. F. Lucas, of the British Council, was also invited to attend the ceremony. The Minister of Education, Hasan Ali Yücel, in his opening address, referred to Turkish progress during the twenty years since the establishment of the Republic. The consequent changes in the national outlook have developed a need for scientific and technical training which is now enhanced by the mechanization of armed forces in a world at war. Hitherto Turkish educational institutions have lacked equipment for practical training; but Turkey has now an established policy of education based on positive knowledge to reinforce the earlier practice of theoretical training only. The nation needs mechanical engineers, mining and civil engineers, and the great problem of Turkey to-day is to find the means for training students in large enough numbers to satisfy the national requirements without reducing the educational standard. The Government is keenly aware of these needs and has sanctioned the establishment of this faculty as a step to meet them. The assembly was later addressed by the Rector of the Faculty, by a student, and by Prof. Kerim Erin, of the Faculty of Science, University of Istanbul.

The new Faculty is temporarily installed in the Gazi Teachers' Training Institute. The Dean of the Faculty, Bay Hayri Dener, is also professor of physics, and a member of the Board of Education. The chair of chemistry and the presidency of the new Chemistry Institute of the Faculty is held by Dr. Avni Refik Bekman. The Ministry of Education has invited the British Council to nominate British candidates for a professorship in each of the existing Departments of Chemistry, Physics and Mathematics. The establishment of this Faculty thus implements the approval of the Bill recently presented by the Turkish Cabinet to the Chamber of Deputies.

### Science in China

A PAMPHLET entitled "The Place of Science in China" by Yap Pow-Meng, honorary secretary of the National Science Society of China, British Branch, published by the China Campaign Committee, 34 Victoria Street, London, S.W.1 (6d.), attributes the failure of the scientific method to establish itself in the intellectual tradition of China mainly to social and economic reasons. From the first, the makers of the revolution of 1911 seized upon science as a means of achieving their ideal of a progressive, industrialized China, and the pamphlet gives a brief account of the organization of education in science, of scientific research institutions, including the Academia Sinica, which is essentially an organization providing facilities for scientific research, the National Academy of Peiping, the Science Society of China, the National Science Society of China, the Fan Memorial Institute of Biology, the Henry Lester Institute for Medical Research, and private technical research institutions, of which the most important is the Hangwai Institute of Industrial Chemistry.

The majority of the research institutions of China were founded in the coastal areas and have now been moved to the west and south-west. Apart from those of the Radium Institute of the Peiping Academy and the Metals Research Institute and Science School of the National Tsing-hua University, Chinese researches in physics and chemistry have not so far been impressive, and in China as elsewhere experimental psychology has not made a complete break from the old philosophical psychology. The pamphlet also includes some account of the organization of science in China's war effort under the National Economic Council, the Ministry of Economic Affairs, the National Resources Commission, the Ministry of Agriculture and Forestry, the National Geological Survey and the National Health Administration, as well of the attempts being made to overcome educational difficulties due to the War.

### Isinglass as a Substitute for Human Blood Plasma

MANY substances have been tried as substitutes for human blood plasma. Recently (NATURE, 153, 145; 1944) reference was made to the use of 'despecciated bovine serum'. A recent note (*Edin. Med. J.*, 50, 758; 1943) describes the use of isinglass, which is available in sufficient quantities and can be cheaply prepared, as a substitute for human blood plasma. Its injection causes no antigenic response. Prof. N. B. Taylor and Miss M. S. Moorhouse (*Canad. Med. Assoc. J.*, 49, 251; 1943) transfused 25 dogs from which 47-71 per cent of the blood had been bled, with 4 or 6 per cent solutions of isinglass, and most of the dogs made a complete and uneventful recovery. Repeated injections over a period of weeks caused

no changes in the viscera, and isinglass does not interfere with the normal regeneration of the blood plasma. H. E. Pugsley and R. F. Farquharson (*Canad. Med. Assoc. J.*, 49, 262; 1943) gave the isinglass solution 58 times to 51 human patients to test it for pyrogenic and other toxic effects. A slight rise of temperature occurred on eight occasions, but no other unfavourable signs were noted in the other cases. When the isinglass was given to patients suffering from acute hæmorrhage, extensive burns, compound fractures and severe circulatory failure, the results were all good, and there were no toxic effects. The amount given varied from 200 c.c. to an infant to 8,800 c.c., given over a period of three days, to an adult.

### Oil from the Sunflower Plants

There are probably few countries of the temperate regions which have a superabundance of fats and oils. War-time conditions, moreover, always accentuate any deficiency, and turn attention upon the possibilities of home production. A recent paper by E. F. Hurt (*J. Roy. Hort. Soc.*, 68, Part II; Nov. 1943) gives the results of experience with the sunflower crop. Oil from the seeds of this crop is useful for edible and culinary purposes, for making margarine, as food for cattle and poultry, for canning fish and making fine soap. Its gastronomic value is equal to the finest olive oil. The crop is widely tolerant of soil types, but removes large quantities of soil nutrients, most of which are retained in the stalk, and can be returned to the ground after harvest. Sowing the seed at an even depth of 1½–2 in. appears to be important, and 7½ lb. of seed is needed to sow an acre by drill. Sunflower is a good cleaning crop, and appears to be but little affected by disease, though it is susceptible to wireworm attack and the depredations of birds at harvest time. Three semi-dwarf varieties—'Mars', 'Pole Star' and 'Southern Cross'—are suggested for Great Britain, and as the supply of fats and oils may be one of the most acute of post-war agricultural problems, the crop appears worthy of more extended trial.

### Thermoplastic Electric Cables

A PAPER on thermoplastic cables, read by Dr. H. Barron, J. N. Dean and T. R. Scott on February 10 before the Institution of Electrical Engineers, reviews the circumstances which have led to a considerable increase in the use of thermoplastic cables within the last few months. It is pointed out that the relative importance of such cables cannot yet be evaluated on a peace-time basis, for the economic level cannot be established and also synthetic rubber is now making its appearance. In order to establish a basis for evaluation, it is desirable to have a thorough understanding of the general characteristics of thermoplastic cables; this is attempted in the paper with particular reference to polyvinyl chloride cables. Indications are given of the polymer situation, the definition of a thermoplastic material and the resulting implications. The building-up and testing of polyvinyl compounds is discussed, and the manufacture, characteristics and uses of cables derived therefrom are considered in detail. A brief survey of other thermoplastics is followed by a comparison of polyvinyl chloride with rubber.

It is concluded that suitably selected thermoplastic compounds can produce satisfactory wires and cables the characteristics of which are such that the corresponding rubber cables can be replaced by these

thermoplastic cables. Oxidation need no longer be considered as the predominant factor in determining life; there are still restricting factors which prevent thermoplastic cables from being worked at temperatures appreciably in excess of those suitable for rubber cables; but these factors are of a different nature and may be countered by development and design along lines which would be impracticable for rubber. The cable engineer has acquired a range of alternate materials which, while they present problems of their own, promise interesting solutions for some existing problems. A period of rapid development of wires and cables of compound characteristics must inevitably ensue so soon as free choice, on an economic basis, of such materials is practicable.

### Industrial Fire Risks

IN A PAPER read in London on December 9 before the Institution of Electrical Engineers, Messrs. W. Fordham Cooper and F. H. Mann describe first the classification of buildings and structural materials in relation to fire resistance, and then deal with the hazard from various industrial materials and processes and the special precautions which should be adopted in providing and operating electrical installations in view of these risks. Flame-proof and intrinsically safe constructions are briefly described. The second part of the paper illustrates the application of the matter discussed in the first part; but, as it is impossible to deal with every risk, attention has been particularly paid to the heavy chemical (gas, coke and by-product) and textile industries by way of examples, although some other matters, notably switch and transformer oil-fire risks, are also mentioned.

### Tuberculosis in Paraguay

IN A RECENT article (*Bol. Of. San. Panamer.*, 22, 318; 1943), Drs. A. R. Ginés, A. Alvarez and M. Mercado state that in June 1941 the control of tuberculosis in Asunción was started under the direction of Dr. Angel R. Ginés, and 40,000 persons were examined in the course of a year. In November 1941, the Ministry of Health amended a decree of 1938 making compulsory the X-ray examination of all public officers, public and private employees, teachers, students, labourers, etc. The examination consisted of a tuberculin test, pulmonary röntgenograms or sometimes merely fluoroscopy and a rapid examination of the skin and mucous membranes. The Tuberculosis Dispensary at Asunción, which was founded in 1922, during the first ten years of its existence could treat only general advanced tuberculosis owing to the lack of modern means of diagnosis; but in 1932 a chair of tuberculosis was created and the campaign against tuberculosis now includes a röntgenological and tuberculin survey and a morbidity and mortality survey in the urban areas of the Republic, diagnosis of the disease by modern methods, effective isolation or quarantine of contagious cases, creation of schools for the tuberculous or pre-tuberculous, vaccination of the newborn with B.C.G., economic and social improvements, creation of an Institute of Social Security, intensive educational propaganda, and eradication of tuberculous animals. The tuberculosis death-rate is calculated to be 199.9 per 100,000, and its relation to general mortality is 15.50 per cent. Tuberculosis with other diseases of the lungs caused a third of the deaths in 1941. Relation to the standard of living is supported by the following death-rates: