

quoted as suggesting that the Upper Cave people may represent the ancestors of the Amerindian population in process of migration to the crossing from Asia to America. Among the numerous artefacts which have been found in association with the remains—stone and bone implements, perforated teeth, shells, and stones used for ornament—several can be traced to an origin varying from 100 to 200 miles away. This lends support to the view that these were a far-travelled people in a stage of further migration. Injuries shown by the skulls indicate that all the members of the group met with a violent end.

British Optical Instrument Display at World's Fair

THE British optical instrument industry, through the Scientific Instrument Manufacturers' Association, is exhibiting a cross-section of the products of the industry at the World's Fair, New York. Eighteen firms are participating, and the exhibit is arranged in four showcases each 8 ft. by 3 ft. 6 in. by 3 ft., also a series of showcases mounted in two panels 24 ft. by 3 ft. stretching from a centre piece formed of a large mass of optical glass, and two photo murals 16 ft. by 12 ft. with showcards let in. The exhibitor firms have regarded the exhibit from a 'prestige' aspect, and by mutual arrangement each firm has endeavoured to send a limited exhibit of its specialities selected so that there may be no overlapping. In other words, makers of theodolites, levels and microscopes are showing a complete range of products, but built up of several makes rather than various models by each maker for the same purpose. The display is very comprehensive. Both in appearance, finish and presentation it should at least equal anything that has hitherto been devised. It is impossible to refer in the course of a brief note to all the different exhibits. These comprise among the more standard types a course-setting bomb sight, aeroplane sextant, echo depth-sounder, Robbin Hill camera, survey lens for aerial camera, spectrograph, spectrometers, apparatus for measuring pressure in mines and dust counters, measuring microscopes, microtomes, prism binoculars, telescopes, photographic lenses and cameras.

Soil Erosion in Jamaica

SOIL erosion in Jamaica forms the subject of a bulletin (No. 17) issued by its Department of Science and Agriculture. The greater part of the cultivated land is situated on steep hillsides, gradients of one in one being frequent, so that sheet erosion is the major problem. These slopes were originally covered by dense forest and undergrowth, the clearing of which has resulted in rapid loss of surface soil. The rate of loss depends largely on the crop grown. Bananas and coffee, for example, are comparatively widely spaced and are maintained under clean cultivation so that soil exposure is very serious, though the necessity for drains in the case of bananas somewhat alleviates the situation. Sugar-cane, on the other hand, is an excellent soil conserver as it has an elaborate root system and the trash deposited after reaping forms a protective cover. Of the less im-

portant crops the cultivation of yams, sweet potatoes, corn or ginger encourages erosion, but citrus causes little loss as the trees are usually left in the grass cover. Erosion is also promoted by the otherwise valuable system of forking the soil at the end of the dry season to facilitate the penetration of the first rains, and by the improper placing of drains. Other factors which contribute to the problem are the practice of short-period tenancy, which gives the proprietor little interest in conserving the fertility of his land, and the system of renting land for the production of one type of crop only. Some fundamental changes in the current agricultural practices will be needed if further loss of valuable soil is to be prevented.

Earthquakes Recorded in India, January-March, 1938

SEISMOLOGICAL information obtained in India is henceforth to be published quarterly as a separate bulletin. The first of these bulletins (*Seis. Bull.*, Jan.-March 1938, Government of India Meteorological Department, Delhi) has been received. It consists of reports from seven instrumental stations, and non-instrumental reports received at Poona. First is given a list of stations with their latitude and longitude to the nearest minute of arc together with other necessary information, and also a list of the instruments and their constants with which each is equipped. For the quarter, Agra records 56 shocks, Bombay 77, Calcutta 89, Colombo 47, Dehra Dun 13, Hyderabad 41, and Kodaikanal 61. The small number recorded at Dehra Dun may be due to poor instrumental equipment. Records for the observatories are separate, giving in each case date, component, phase, time received, period, amplitude, epicentral distance if determined, and remarks concerning the shock or the reception. The macroseismic evidence collected at Poona is valuable, personal observations numbering 62, 12 being from Drosh. The shock with most macroseismic effect was on March 14. It cracked property at East Khandesh, damaged property at Maheswar (Indore) and damaged property, injuring two children, at East Khandesh. Seismologists will be grateful to those concerned with the report for putting the data obtained in a manner convenient for reference, and for taking the important step of having it published at more frequent intervals.

An Electron Diffraction Camera

MESSRS. W. EDWARDS AND CO., Allendale Works, Vaughan Road, London, S.E.5, have recently published details of their Finch electron diffraction camera intended for industrial research. This camera is of the type developed by Prof. G. Ingle Finch, who has done so much to improve the technique of electron diffraction. The camera uses a cold cathode discharge tube as a source of electrons. The fine beam, which is necessary for a sharp diffraction pattern, is obtained by using a series of diaphragms and by focusing the beam upon the screen with a magnetic coil. A useful feature is that both the diaphragm and specimen holders are standardized so that they will fit any of the six ports in the instru-

ment. Moreover, all the necessary adjustments of the diaphragm and specimen can be made *in vacuo* from the outside. The joints are ground and polished flats held in contact by the atmospheric pressure, a point of importance in routine work where quickness in changing specimens is essential. In this instrument the specimen can be exchanged and the system evacuated in a matter of minutes. Only one criticism—a minor one—can be made. The shape and size of the window are such that the eyes must be held quite close if the whole pattern is to be seen, and the screen is then rather near for comfortable vision. Suitable pumps are supplied, a variety of systems being available to suit individual needs, or a standard unit is made up ready for use. This instrument is noteworthy as it marks the entry of the diffraction camera into the industrial research laboratory, where it should yield valuable information upon metallic surface structure, to mention only one of the many possible industrial fields of investigation.

Energy obtained by Transmutation

MR. ROBERT D. POTTER, of 'Science Service', Washington, D.C., points out that the confirmation of the artificial breakdown of uranium announced in New York (see also NATURE, Feb. 11, p. 233) is in the direct succession of experiments carried out in recent years on the transmutation of the elements. For centuries, alchemists had dreamed of transmuting base metals into gold. It was imagined that enormous wealth would be at hand for the discoverer of this transmutation, and dire forecasts of the effects of this discovery were made, such as a complete revolution on the financial pattern of the world. We know that this transmutation has now been achieved for most of the known chemical elements. Transmutation's biggest result is the theoretical incentive it has provided for further physical researches. In a similar way, the dream of releasing the large amounts of energy locked inside atoms has been in the minds of men for many years. When the most efficient transformation of energy takes place in the atom of uranium so that a neutron can slip into it, the energy released is only one fifteenth of that required to bring it about. In fact, neutrons are so easily absorbed by all atomic nuclei that many of the neutrons produced with such poor efficiency will only go into atoms other than uranium. There need be little fear of an explosion in Nature due to uranium. The very heavy elements, in which such an energy release can be secured, occur only in very small amounts in the earth's crust. The release of atomic energy can only be achieved by direct experiment with this end in view and with elaborate laboratory apparatus.

Archæological Discovery near Hove

A SOMEWHAT remarkable find of traces of what would appear to be an ancient settlement is reported from the neighbourhood of Hove (*The Times*, February 20). The discovery has been made on the downs, north of Hove, where the existence of such remains had not previously been suspected. It is

thought that they may be Roman, possibly of the first century A.D. The discovery was made on February 17 by a Corporation labourer who unearthed a collection of pottery, less than eighteen inches from the surface, when digging sewer trenches on a municipal housing estate. A further find was an earthenware vessel filled with about 450 small bronze coins, on some of which the head of a Roman emperor has been distinguished, but of a date not yet established. It is thought that the settlement, which overlooks Hove from the hills, may have been established about A.D. 50 and have lasted until the third century. The site is being investigated by Mr. H. G. Massey, curator of the Hove Museum, with the assistance of Dr. Cecil Curwen.

Earthquake in Bulgaria

ON February 17, an earthquake of considerable intensity was experienced at Gornadjoumaja and Sofia in western Bulgaria. At the same time a strong roaring sound was heard, and many people fled from their homes, though no serious damage or casualties are reported. The epicentre of the shock may have been about fifty miles south of Sofia, where there is the most pronounced seismic centre in Bulgaria. Between the years 1749 and 1936, 1,420 earthquakes had their epicentres in this region, and one at least had an intensity greater than 7 on the Rossi-Forel scale. The most disastrous shocks in Bulgaria in recent years were those of April 14, 17, 18, and 21, 1928, which were felt at Chirpan and Plovdiv and did more than £4,000,000 damage.

Science and Society

THE Division for the Social and International Relations of Science of the British Association is arranging a programme of meetings at which topics of immediate interest and importance will be discussed. The first of these meetings will be held on March 28 at the University of Reading, when two sessions will be devoted to a discussion on "Milk in its Nutritional and Allied Aspects". The chairmen of the sessions will be Sir Richard Gregory and Sir Daniel Hall. Other speakers will deal with deficiencies of diet, health aspects, pasteurization, production, cost, economic and social implications. It is also proposed to arrange meetings in the early summer in London and Manchester for review of the social relationships of science, and for discussion with special reference to pressing problems in industry and agriculture. In connexion with the Manchester meeting, Prof. H. Levy has been appointed to deliver the Alexander Pedler Memorial Lecture in which he will explain the method of approach in the study of the social problems of science, with particular illustrations of the application of scientific discoveries to industry. During the forthcoming meeting of the British Association in Dundee (August 30–September 6), the Division will hold three sessions when it is proposed to consider the co-ordination of scientific research, population movements and nutrition. Sir Richard Gregory, chairman of the Division, and lately editor of NATURE, will deliver an address on "Science and Social Ethics".