

led to shortages here and there which are not being compensated by discovery. Salvage and recovery are with us as permanent aspects of the conservation of resources, and not only as part of a war economy. Scrap recovery is of increasing importance and must figure with natural resources in any scheme affecting the control of raw materials. Referring to remarks made by Mr. Hutchings, principal director of salvage and recovery, Ministry of Supply, regarding economy in use and in manufacture, Sir James emphasizes that there must be substitution of one material for another so as to prevent a scarcity of one raw material holding up production. Salvage involves policy and planning to ensure that the materials required are in the right place at the right time and in the right amount, and the discovery of available materials, as well as their collection and disposal to the best advantage. In regard to metal scrap, an international convention for marking material made from the main types of alloys to help in their easy identification is required, as well as improved methods for sorting and cleaning old scrap and getting it into suitable form for re-melting. Losses by corrosion when scrap, often finely divided, is kept for long periods, must also be avoided by early removal of dumps. In the grand strategy of post-war reconstruction, the prevention of all waste throughout the world, Sir James urges, must occupy a dynamic position, and he includes in his survey not merely minerals, rubber, bones, oil, paper, kitchen waste, but also wastage of human material in industry or through defective education.

Engineers' Study Group on Economics

THE tenth anniversary of the foundation of the Engineers' Study Group on Economics was marked on May 8 by a social gathering at the home of Lady Rhys Williams; among those present were Sir Richard Gregory, Prof. F. Soddy, Lord Marley and representatives of organizations interested in economic and social reform. Formed initially by a group of engineers through the efforts of the late Mr. John L. Hodgson, the Engineers' Study Group soon enlisted the support of other technical and scientific workers and, under the presidency of Sir Richard Gregory and later of Sir Richard Paget, set out to prove that the scientific method can be applied to social and economic problems. Among its earlier reports were an "Analysis of Twenty-four Social and Economic Systems" and "The Design of a Family Budget with Special Reference to Food" (see *NATURE*, April 11, 1936, p. 627). Much of the work of the Group—which covers an unusually wide field, from statistical data on national production to psychological hints on how to deal with misguided enthusiasts—is issued in the form of duplicated reports which are circulated among members and associated organizations.

Perhaps a unique feature of the Engineers' Study Group on Economics is the way in which it sifts all types of suggestions and helps those who wish to build up groups and associations in the pursuit of desirable social ends. Lady Rhys Williams, who has prepared some carefully thought out proposals on the lines of the Beveridge Report (see *NATURE*, December 12, 1942, p. 692), referred to her long association with the Group. Mr. Raymond Perry, chief executive officer of the Committee for the Scientific and Industrial Provision of Housing—whose report on pre-fabrication may well prove an important step in solving the post-war housing

shortage—acknowledged his indebtedness to the E.S.G. and to the Research Co-ordination Committee, at the headquarters of which his own committee began its work. Prof. Jacques Metadier, wishing to start a journal to foster co-operation among scientific men of the United Nations, approached the E.S.G. and received help and advice which led to the publication of the "Solidarity" series. Mr. W. H. Edridge, of the Joint Council for Monetary and Economic Research—a body which has brought together many separate groups working towards monetary reform—likewise mentioned the collaboration of the E.S.G., which through its unobtrusive and disinterested help has won the confidence of many attempting to solve the problems of a rapidly changing world. Representatives of other organizations added their commendation of the work of the Engineers' Study Group, the address of which is now 20 Buckingham Street, London, W.C.2.

Crack Detection in Non-Ferrous Materials

At a demonstration given in London recently, the potentialities of the 'Hyglo' system of detecting flaws in non-ferrous metals and other materials were demonstrated. From its name it will be recognized as an application of the well-known phenomenon of fluorescence to the illumination of flaws, cracks, inclusions and porosity, which are thereby rendered quickly noticeable when examined under the ultra-violet lamp. This particular system is specially notable, from the point of view of the user or potential user, by reason of the simplicity, rapidity and certainty of its operation, and of the ease with which it can be introduced into a scheme of mass production. The articles to be examined are first dipped for about two minutes in a solution containing the fluorescent material and a substance which at its boiling point produces a vapour to quench fluorescence on the surface. By preparing a sufficient number of articles at the end of each day, the work of inspection can be started at once in the morning and can proceed without interruption. When the articles so treated are brought under an ultra-violet lamp, the fluorescent material which has penetrated the cracks, spongy places or other flaws glows strongly and defective articles can be recognized at once.

At the demonstration, various specimens could be examined, and these included aluminium castings, bronze rings and porcelain insulators. In most of these the defects might easily have been overlooked in visual examination even with the aid of a magnifying glass, but under the ultra-violet lamp they were unmistakable. It was evident that to some extent the seriousness of a particular flaw might be gauged by the greater intensity of the fluorescence due to the deeper penetration, but this should be regarded as of secondary importance, as the first consideration is that the flawless articles should be separated from those which have defects—the final decision on any defect is a matter which requires individual inspection. The suggestion that the system could be operated in conjunction with a conveyor belt is quite feasible, as two lamps can be used. After passing the first lamp each article is turned over by an automatic arm and so both sides come under examination. It will be noted that the 'Hyglo' system requires the two essential operations of dipping and exposure to ultra-violet light. The ancillary operations of washing and chalk dusting have been entirely eliminated and as a result the work can be carried

out by unskilled personnel after perhaps half an hour's training in the routine. Further, as the liquid used is self-regenerating and waste is reduced to the absolute minimum, the cost of the process is moderate; an example given was the case of a production run of 1,600 articles each having a superficial area of 2.1 sq. ft., in which the operating cost, including energy, drag-out losses and labour at standard rates, was 0.08*d.* per sq. ft. The makers of the plant are High Grade Metal Tests, Ltd., 24 Marshalsea Road, London, S.E.1.

Subnormal Factors in Human Personality

IN his presidential address before the Section of Psychology and Educational Science at the thirtieth Indian Science Congress at Calcutta in January 1943, Dr. B. L. Atreya spoke on the "Supernormal Factors in Human Personality". In a rapid review of his chosen field, Dr. Atreya sketched in broad outline the history of the subject as it was known in the West and pointed out the work that had been done since the early days of the Society for Psychological Research, when investigation was hindered by lack of means and by the slight development of those statistical methods whereby results might be quantitatively analysed.

Although Dr. Atreya appears not to have seen fit carefully to distinguish the wheat grains from the mountain of tares, his outline of the mass of material will perhaps fulfil the purpose of dissuading future students from tackling the subject unless they are prepared, not only to face some of the most formidable of psycho-philosophical questions, but also to make themselves acquainted with almost the whole range of studies dealing with the psychology of deception, testimony and so on. Competent investigators are rare and urgently wanted, and it is to be hoped that Dr. Atreya's address will stimulate Oriental students to apply Western methods to the abundant material available in their own lands.

Prawn Fisheries of India

DR. B. CHOPRA, in his presidential address to the thirtieth Indian Science Congress, Calcutta, 1943, has gathered together interesting information concerning the various Indian prawns of economic importance and their fisheries. There are many species of edible prawns in India, the most important and largest being the so-called sea-prawns or Penæids. These apparently breed in the sea, the young migrating to the lower salinities of backwaters, lagoons and estuaries to return again at maturity to the sea to hatch their eggs. Among the freshwater prawns the members of the Palæmonidæ occur in enormous numbers with extensive migrations from fresh to brackish waters, presumably for breeding. The tiny Sergestid *Acetes*, rarely more than an inch in length, makes up for its small size by its abundance and occurs in estuaries and backwaters, but rarely penetrates beyond tidal influence. Not a single complete life-history of any of these prawns is known, and there is here a great opportunity for research which should yield good results. Methods of fishing and curing are mostly very primitive although in certain parts, notably Madras, much progress has been made in improving methods, gear and boats. More research is necessary in every direction, and Dr. Chopra's address indicates the special needs of the industry.

Folk-Lore of Epilepsy

IN a recent paper on this subject (*Med. Press and Circ.*, 1, 154; 1943) Dr. J. D. Rolleston directs attention to the large number of synonyms for epilepsy, many of which are popular terms, alike in Ancient Rome, the Middle Ages, and Bavaria in recent times. The English term 'falling evil' or 'falling sickness', which corresponded to the Latin *morbus caducus*, was for a long time prevalent but has now become obsolete. The chief folk-lore cause for epilepsy, which is still held by primitive races, was demoniac possession. Many examples of this belief have been found not only in the ancient Babylonian and Assyrian texts and the literature of ancient Greece and Rome, the Bible and the Talmud, but also in the West Indies, West Africa, Patagonia, Siberia, India, Ceylon, China and elsewhere (Tylor and Frazer). Another factor in the folk-lore causation of epilepsy was an astrological origin and the moon in particular. Moreover, the state of the moon was responsible in popular estimation not only for the occurrence of epilepsy but also for the efficiency of treatment.

As regards prophylaxis of epilepsy, in accordance with the rule in medical folk-lore, preventive methods in epilepsy were much rarer than curative treatment, and can be classified into external and internal applications derived from animals or plants. Treatment consisted in remedies of human origin such as blood, umbilical cord or placenta by mouth. Animal remedies took the form of their flesh, blood, milk, rennet, bile, lung, urine, testes or dung and were administered most frequently by mouth, but were sometimes made up into a plaster, liniment or amulet; plant remedies consisted of mistletoe, elder and roots and seeds of the pæony, and mineral cures were represented by precious stones, silver coins and lead. There are numerous examples on record of the supposed transfer of epilepsy to other persons, animals or plants. Other methods of treatment were charms, invocation of patron saints and miscellaneous cures, which included mock burial, castigation of the patient to drive out the supposed evil spirit, venesection and inhalation of tobacco smoke.

Simplified Subscribers' Telephone Sets

AN article by E. S. McLarn (*Elect. Comm.*, 21, No. 1; 1942) describes designs which represent the first successful attempt at evolving a type of subscriber telephone set in which the components are designed and co-ordinated logically with the view of achieving simplified installation, maximum reliability and economy in maintenance. The improvements resulted from lengthy and intensive study of subscriber set behaviour in the International Telephone and Telegraph Associate Telephone Companies, operating under the most diverse conditions. Maintenance cost could be lowered if repairs were reduced to a simplified error-proof mechanical operation, for less skilful help would be required and the training period curtailed. An analysis of telephone set troubles under all kinds of climatic conditions shows that the causes are due principally to (a), excess moisture, dirt, lint and insects, and (b), open- and high-resistance circuits brought about by deteriorated soldered joints, broken conductors and poor contact between conductors and screw-heads.

The improved features of the new telephone sets introduced as a result of the investigation may be summarized as follows: complete unit mounting of