

interesting observation that where a leaf was isolated from the bulk of the foliage, its shadow took the form of a crescent, thus actually being a negative image of the visible portion of the sun during its partial eclipse. In his inimitable way, he immediately devised a laboratory experiment to illustrate the phenomenon, and thus showed that when light from an extended source throws the shadow of a small object on a screen, under such conditions that the umbra of the shadow is not formed, then the shadow is the negative inverted image of the source of light.

Mr. Edser's textbooks on heat, light, and general physics are very widely known. He took special pains to make all his explanations as clear as possible, and many of the experiments described in his books were original and required only the simplest apparatus. When his textbooks were written, few science students of the standard for which they were intended were familiar with advanced mathematical methods, so the calculus was not used in them, and therefore some of the proofs now appear cumbrous from a more modern point of view. He was, however, very successful in presenting difficult parts of his subjects without making large demands upon the mathematical knowledge of students, though he was himself a good mathematician.

Since 1915 Mr. Edser's work was mainly concerned with the physical problems involved in flotation processes of mineral separation. One of his colleagues of Minerals Separation, Ltd., writes as follows:—"Much of his work in the investigation of the complex phenomena of flotation was published in the 'Reports on Colloid Chemistry'

of the British Association, his more important contributions being 'The Concentration of Minerals by Flotation' (Fourth Report, Coll. Chem., Brit. Assoc. Rept., 1922) and 'Molecular Attraction and the Properties of Liquids' (*ibid.*). From the latter the following conclusions he arrived at may be quoted: 'Of the energy which represents the surface tension of a liquid 94% is located in the surface layer one molecule diameter in thickness, while the remainder is located at a greater distance from the surface'. And in respect of the Law of Molecular Attraction: 'Two molecules attract each other with a force that varies inversely as a power of the distance separating them, and this power must be higher than the fifth. In all liquids the result of analysing the experimental data is to indicate that the molecules attract each other inversely as the *eighth* power of the distance separating them, but mercury is not in good agreement with this law.' Some could have wished a wider audience for these papers than their present (virtual) burial place affords."

In several respects, Mr. Edser represented the best type of product of the physical laboratories of the Royal College of Science and the stimulating influence of Sir Arthur Rücker and Prof. C. V. Boys. He was not only fertile in ideas, but also skilful in all laboratory arts, and able therefore to devise and construct simple and effective apparatus to test or demonstrate them. Withal he was a delightful companion, an artist of considerable merit, and of catholic literary taste; and his memory will long be cherished with affection by a wide circle of friends.

News and Views

Report of Council of the British Association

THE report of the Council of the British Association, adopted by the General Committee at the York meeting, included several matters of particular interest. The period of the presidency, for example, now coincides with the calendar year instead of extending from one meeting to the next. The nomination of the new president is made known, however, on the first day of the annual meeting, and the General Committee accepted the recommendation of the Council that Sir Frederick Gowland Hopkins, president of the Royal Society, should be the president of the Association next year, when the meeting will be held at Leicester on Sept. 6-13. A notable change of policy with regard to allocations of grants to research committees was brought before the General Committee. For many years these grants have been made on a year-to-year consideration of available balances and have amounted to about £1000 annually. The general treasurer, Sir Josiah Stamp, in a memorandum upon the financial position and outlook of the Association, pointed out the weakness of this system and suggested that, for a time at least, not more than £400 should be expended annually from general funds on grants for research, and that an annual sum of £500 should be placed to a contingency fund. This recommendation was approved by the Council, which

is of opinion that the true function of the Association, in making grants to research committees, is the initiation of particular pieces of research rather than their quasi-permanent endowment. In addition to the grants made from general funds at the annual meetings, the Council can deal at any time with applications for grants from the Caird Fund. Prof. J. L. Myres retires from the office of general secretary of the Association, which he has held since 1919, and the Council records its deep sense of gratitude for his devoted services. The two general secretaries are now Prof. P. G. H. Boswell and Prof. F. J. M. Stratton. The new members of Council are Sir Henry Dale, Dr. Allan Ferguson, Prof. R. B. Forrester, Dr. H. S. Harrison, Sir John Russell, and Prof. F. E. Weiss.

Social Consequences of Scientific Discovery

THE concern for the social consequences of the application of scientific discoveries which has been voiced by Dr. L. P. Jacks in a series of recent articles was reflected in several of the addresses and discussions at the recent British Association meetings. Dr. Jacks suggests that, instead of lending itself to the creation of endless desires, science might regard its task of giving man control over the forces of Nature as sufficiently advanced for the time being and turn its attention to the equally important task of assisting man to control himself. Recognition of this necessity was as explicit

in Sir Alfred Ewing's presidential address before the British Association as in the forceful address delivered by Prof. Miles Walker to Section G (Engineering), which referred frankly to the hampering of developments by vested interests and the middleman, as well as to the value of the contribution to the improvement of the lot of mankind made by those who possess the power of devoting their whole energy to the execution of sound, practical, and beneficent projects for the sake of those projects themselves and not primarily from selfish motives or in pursuance of some irrational prejudice. Long after science has shown the way to make things better for the people, unintelligent control and stupid prejudice preserve the old evils and prevent the spread of better ways. If effective action is to be taken, now that in so many fields physical science has instructed man how to control and eliminate waste, the human sciences must show him how to control the waste forces of his own nature.

As an example of the potentialities, Dr. Jacks and Prof. Miles Walker both refer to Lord Baden-Powell's discovery of how the play-hunger of the young human animal, his love of adventure and fun, his sporting instincts, and even his devilries, can be used by skilful hands for the development of self-control, self-respect, courage, loyalty, discipline, good fellowship, responsibility, and competence. This is a great discovery, to be ranked with any of the achievements of physical science, and is a token of what may be possible when we really address ourselves to the development of the social sciences. The picture Prof. Miles Walker draws of the State as controlled by the engineer, with the elimination of waste at its source, the control of production, improvement of distribution so as to secure the manufacture of things men want and their distribution in the simplest way with the minimum addition to the cost, involves drastic curtailment of competition and perhaps a profound change in our social habits and attitude towards buying and selling. In insisting on technical knowledge and administrative ability as a qualification for public office, he is, however, expounding a doctrine freely voiced in *NATURE* for many years, and the proposed experiment of a small, relatively self-supporting community is one that should not be without appeal to scientific workers. The time is opportune for courageous and adventurous experiment. The world has yet to receive an object-lesson in the high standard of life which should be possible by good organisation and modern methods, where prejudice and incompetence are no longer allowed to deny to society the benefits of leisure or material possessions with which the application of scientific discoveries would endow them.

Political Economy and Unemployment

THE confusion which exists in many minds between creative science and mechanical science is apt to obscure the contribution which creative science makes towards the solution of the unemployment problem, a contribution which, under modern conditions, is the more important because so many of the new industries, which fundamental scientific discoveries have created, minister to the increasing leisure needs

of mankind. The escape of output from limitations of human effort, resulting from power production, has economic consequences which are already so far-reaching that, in the physical sphere, creative science can do little more than mitigate the severity of unemployment, and Mr. H. R. Leech, of 10 Dale Street, Runcorn, has rightly directed our attention to the necessity for original and creative research in that most uncreative of sciences—political economy. It is only as political economy and all the related so-called human sciences are placed on a firm scientific foundation, and as scientific methods are rigorously applied to the analysis of the problems of distribution of leisure and goods with which we are confronted in the age of incredible abundance which science has given us, that we can expect to solve an unemployment problem of the present magnitude. When impartial solutions have been mapped out by scientific methods, there will still remain for scientific workers and others the moral responsibility of seeing that those solutions are applied, and that the profusion with which science has now endowed mankind is no longer permitted to exist side by side with such widespread unemployment, poverty, and distress.

Scientific Research and Industry

THE Committee appointed in March 1931 by the Economic Advisory Council to examine the project for promoting new industrial development in Great Britain by establishing a central national research organisation independent of existing Government and private organisations, has just issued its report. This gives a survey of the existing organisation of industrial research in Great Britain and an analysis of the arguments for a new national research organisation, as well as of proposals for a development fund for the Department of Scientific and Industrial Research, a compulsory levy for support of research associations, and the preparation by Government of scientific digests. The Committee is satisfied that the existing Government organisation for the promotion of industrial research is efficient and sufficiently flexible to enable it to develop along the lines required to meet the changing needs of industry. The formation of a new national research organisation would cut right across the existing organisation of the Department of Scientific and Industrial Research, and, by causing confusion of purpose and distraction of effort, would be likely to injure rather than forward the cause of scientific research in British industry.

Research Development Fund

THE Committee considers it is highly desirable that the Government should have at its disposal a small fund for research development, and that provision should be made for its continuance when the balance of the fund at the disposal of the Advisory Council for Scientific and Industrial Research is surrendered to the Exchequer at the end of the current year. The Committee refers to evidence received as to the value of the services rendered to industry by the research associations, and trusts that it will be possible for the Government to continue to provide sufficient financial assistance to secure their efficient functioning until industry