

and non-scientific side of his life than on his scientific achievements, which are reasonably well known.

Sir Eric Rideal (London) then gave an address on "Colloid Science: a Century of Progress". Sir Eric reviewed the development of colloid chemistry since 1861, commencing with Graham's work on peptization, gels and sols. He then discussed work on coagulation, flocculation and peptization of sols, drawing on the work of Von Weimarn, Hardy and Perrin for examples. A review of optical investigations on colloidal solutions was then given, reference being made to the work of Faraday and Tyndall, and finally to the ultramicroscope of Zsigmondy and Siedentopf. Gels and adsorption were dealt with rather more briefly, mention being made of the work of Freundlich and the swelling experiments of van Bemmelen.

The final speaker in the morning session was Dr. A. S. C. Lawrence (Sheffield), who gave a talk describing the work of his group at Sheffield on soap-water-amphiphile systems. Graham did not carry out any investigations on soap solutions, but they come within his classification of colloids. Dr. Lawrence commenced with a general description of the colloidal and other phenomena encountered, and of the phase diagrams of the systems. He continued with a more detailed account of the liquid crystalline forms and myelinic figures which are obtained on adding soap solutions to crystals of a polar additive, or solutions of additive to a soap crystal. These were interpreted in terms of adsorption of soap and additive at the solid-liquid interface. In conclusion, mention was made of the effect of organic and inorganic salts on the systems.

For the afternoon session, the chairman was Sir Eric Rideal and the first speaker, Dr. A. P. Prosser (London). Dr. Prosser gave a talk on the forces which, in conjunction with electrostatic forces, stabilize all colloidal systems. Beginning with a general account of van der Waals forces and London dispersion forces he then went on to deal with their origin and the differences which exist when bodies are very close together ($< 250 \text{ \AA}$. apart, the unretarded case) or relatively far apart ($> 2000 \text{ \AA}$., the retarded case). He then gave a brief outline of the theory of the

forces and the problem of evaluating them from the theory in the retarded and unretarded cases. The experimental determinations of attractive forces by the groups led by Bradley, Derjaguin, Overbeek and Kitchener were then discussed, along with some recent experiments on flocculation in colloidal systems.

The second paper in the afternoon, entitled "Polyelectrolytes", was by Prof. J. A. V. Butler and Dr. D. J. R. Laurence (London) and was read by Dr. Laurence. The subject-matter is directly connected with Graham's work on caramel and gelatin. Dr. Laurence mentioned the general properties of polyelectrolyte solutions such as high viscosity and gel formation. He then went on to discuss more specialized properties such as titration curves, conductivity curves and transport properties which give rise to the picture of a polyelectrolyte molecule in solution as a charged random coil with small regions, some of which are 'free' and some 'trapped' inside the coil. The last point is particularly well illustrated by measurements of transport number. The spatial configuration of the coils was then discussed in terms of the information obtainable from sedimentation, viscosity and light-scattering measurements. Finally, deoxyribonucleic acid was treated in rather more detail, followed by a mention of proteins, including ribonuclease.

The final speaker, Prof. J. T. G. Overbeek (Utrecht), spoke on the drainage of soap films. He began with a few general remarks on the structure of soap films, their thickness and colours. Then followed a description of the stretching of films, with the formation of new film, and the drainage of films. Finally, the nature of the black film was discussed, with reference to the discontinuity in thickness at the edge of the black area, the forces giving rise to the black film and the ultimate breaking stability of the film when electrostatic and van der Waals forces are opposed to one another. Prof. Overbeek then presented a colour ciné film of the drainage of soap films illustrative of all the points he had mentioned, and containing, in addition, several beautiful illustrations of moving colour effects obtainable in soap films.

A. J. HYDE

THE LIBRARY ASSOCIATION ANNUAL CONFERENCE

THE papers presented at the annual conference of the Library Association at Hastings during September 19-22 were of general rather than specific interest to the scientist. Mr. Leslie Wilson and Viscount Caldecote made some reference to the National Reference Library of Science and Invention and the National Lending Library for Science and Technology and to the proposals for the re-organization of the Library Association, particularly as they seek to establish the Association as the professional association of librarians, and their papers are of direct consequence to scientists and technologists. Sir Charles Snow's lively presidential address, with its plea for a wide view of the functions of the public library in the Welfare State, should also commend itself to them. Sir Charles believes that the public libraries must in future assume some of the functions of the great private lending libraries and that, in

particular, they have a real responsibility to contemporary literature which some of them have yet to recognize. Mr. K. J. Lea, county librarian of Essex, on the other hand, while not discounting this amenity aspect, to which the smaller library authorities are virtually limited, urged that more attention should be given to the educational and specialized services, if necessary by the development of a two-tier system based on co-operation between boroughs and counties, the possibility of which is already being demonstrated by the county libraries of Britain.

Mr. Leslie Wilson's paper, on "Libraries and Information Services: the Challenge of the Future", was equally concerned with co-operation, alike between such bodies as the Library Association and the Association of Special Libraries and Information Bureaux and between these and institutions concerned with the use of information. He stressed first

the desirability of library and information work being recognized generally as a single distinctive professional activity and then the relevance of such an activity to the fragmentation of knowledge. Effective special library work in any one field depends, he said, on co-operation between librarian and information officer and the specialist working in that field, and he suggested we have still far to go before the idea was generally accepted that accumulated knowledge, with the librarian as its vehicle, is as essential to industrial prosperity as capital investment, production and sales. Viscount Caldecote indeed went some way in this direction when, in his paper earlier that day, he suggested that the research worker can reasonably expect library staff to be responsible for two-thirds of his library searching. Mr. Wilson thought, moreover, that we must expect a much greater participation of the Government in library affairs, and for all these reasons it would be wise for librarians and their organizations to clarify their ideas as to the form of partnership in which they could function most effectively.

Mr. Wilson cited the plans for the new National Reference Library of Science and Invention as a glaring example of the confusion and frustration likely to result from failure to achieve such co-operation and consultation between user and librarian at the earliest stage; but he also viewed with concern the proliferation of professional bodies concerned with such a relatively small field as library and information work. Formal federation is probably impractical at present, but he suggested that some form of consultative committee or a series of consultative committees, each dealing with a special interest such as education or research, might help to achieve the closely knit community that is needed. The Aslib Groups, he suggested, seem to be a reasonably successful means of dealing with the problem, but of the seventeen organizations listed in the handbook of special librarianship and information work as active in this field in the United Kingdom, at least the Library Association, Aslib, the Circle of State

Librarians, the Standing Conference of National and University Libraries, the United Kingdom branch of the International Association of Music Libraries, the Association of British Theological and Philosophical Libraries and the Institute of Information Scientists should come closer together.

Viscount Caldecote's paper expressed an industrialist's view and criticism of library and information services. He thought that the main industrial library problem centre around the small firm. He suggested first that the larger firms might make their own extensive library facilities available to these smaller firms, and that by doing so the trained library staff would enable the smaller firm to tap also the resources of the national libraries. Viscount Caldecote repeatedly stressed the importance of quality of trained library staff, and he also suggested that member firms could do more to strengthen the library resources and services of the Research Associations. He was impressed by the value of the area co-operative schemes formed in Sheffield, Newcastle upon Tyne, Liverpool and elsewhere, and in this connexion he thought the liaison thus established with educational bodies is of vital importance for the pooling of resources and knowledge. Finally, in discussing briefly the functions and staffing of industrial libraries, themselves, Viscount Caldecote suggested that the Association might form a committee to study the automation of routine library services.

Other papers presented at the Conference, by Dr. C. Bibby and by Mr. A. E. Sanderson, dealt with the functions of training-college libraries; Mr. B. Williams firmly challenged the exercise of censorship in reading by a local authority or other body. In his Library Association Annual Lecture, "The Fourth R", Dr. Lincoln Ralph reviewed the limitations of an education confined to reading, writing and arithmetic in coping with the modern world; he urged that it is necessary not simply to instruct but also to inspire. Education should impart a sense of values, of the purpose of life, and lead to a re-birth.

THE AUSTRALIAN ATOMIC ENERGY COMMISSION

THE eighth annual report of the Australian Atomic Energy Commission*, which covers the financial year ended June 30, 1960, records a year of substantial progress in the high-temperature gas-cooled reactor project, in the production and application of isotopes, and in the installation and commissioning of new equipment.

The report consists of nine sections dealing respectively with an outline of the activities of the Commission; the search for uranium; uranium mining; raw materials, including thorium and beryllium; research activities; isotopes; nuclear power; international agreements and co-operation with the International Atomic Energy Agency; and general activities. Details of research contracts, postgraduate research studentships and undergraduate scholarships, together with the financial accounts and the names of the staff of the Commission, are given in appendixes to the report.

Although the world's annual uranium production potential at present exceeds the demand, steadily

increasing requirements for nuclear power stations are expected to develop from the 1970's onwards, and the Commission, through the Bureau of Mineral Resources, has continued its surveys for new deposits of uranium. Except for one area stated to show anomalous radioactivity, no discoveries of radioactive materials were reported to the Commission during the year, but a number of further monetary reward instalments were paid for earlier discoveries.

For the first time, complete production figures are given in the report for operations at Rum Jungle since the start-up in 1954. A record tonnage of ore was treated during 1959-60, and all the uranium oxide produced was delivered to the Combined Development Agency under the terms of the Rum Jungle Agreement, which expires on January 6, 1963. No mining was carried out during the year, and the treatment plant continued to operate on stockpiled ore.

Full-power routine operation of the reactor *Hifan* began in February 1960 after a prolonged period of testing and calibration. The reactor has given little trouble, and major irradiation work has been performed for the Commission, and under contracts

* Australian Atomic Energy Commission. Eighth Annual Report for the year ended 30th June, 1960. Pp. 63. (Coogee, N.S.W.: Australian Atomic Energy Commission, 1960).