the departments of state in the United Kingdom with chemistry, it is possible to trace a gradual development and ultimately a change in attitude, in passing through the stages of compulsion, expediency and assistance.

From motives of security the state was compelled to give heed to chemical matters involved in its defence, such as those which appertained to munitions of war, including metals used in their manufacture; it was constrained to uphold the standard of its currency; and it was obliged to secure a revenue. As a consequence, the first chemical departments were set up in connection with these activities and from them have emanated notable additions to chemical knowledge, improvements in methods of manufacture and specifications for government requirements that have led to improved material becoming available for civilian use. Although mostly conducted with inadequate staff, the study of these questions, it can be claimed, proved of national advantage when the time of need arose.

In the next stage, the public conscience having been awakened by the pioneering work of Playfair, it appeared expedient to safeguard health by attention to sanitation, and, as the quality of food was unsatisfactory, to set up a chemical control. Although a start was made by Davy, a member of the then Board of Agriculture, progress in this subject passed to private enterprise, and a century elapsed before direct assistance was afforded to this important matter. Out of these activities come our present system of supervision over the purity of air, water and food, and also the recent progress made in the application of chemistry and physics to problems of the soil.

The last and more recent stage is in the nature of a recognition that the state is under an obligation to assist science, and in this case the science of chemistry, on which so many important industries are based. It took the war to bring home the danger that, although the record of the country as regards discovery in pure science was unrivalled, its systematic application was too often left to other countries, with the result of lamentable shortages during war and the risk of many industries being ineffective in peace. A measure of government intervention and action appeared requisite, and research became the business of a government department. Outside of the great firms which maintain progressive chemical staffs, the firms in numerous industries have been encouraged and assisted to cooperate in the betterment of their manufactures by the application of the methods of science, and from these associations and the organizations dealing with national problems begins to flow a stream of communications indicative of useful work accomplished. Nor is the foundation of it all neglected, for encouragement is given to workers in the academic field to follow out their ideas, whithersoever they may lead them, in accordance with the truth that "research in applied science might lead to reforms, but research in pure science leads to revolutions."

It is important to be able to record an advance in securing an interchange of information among government departments, and between their work and that of universities, a matter which before the war was unsatisfactory, as it was mainly personal and sporadic.

And it is a hopeful sign also that, although the knowledge and appreciation of the methods and capabilities of science are still generally wanting, there have been of late signs that these matters are coming to engage the attention of those who guide the policy of the state.

ROBERT ROBERTSON

PUBLICATION OF JOURNALS IN THE FUNDAMENTAL MEDICAL SCIENCES

THERE appears to be a general belief that adequate publication facilities for investigators in medical science are lacking, on account of financial difficulties in the publication of the journals representing the fundamental medical sciences. The Division of Medical Sciences of the National Research Council therefore appointed a committee (C. W. Greene, D. R. Hooker and C. M. Jackson, chairman) to gather information on this subject. Questionnaires were sent to the editors of 23 American journals in this general field, and more or less complete replies were received from the following 19:

American Journal of Anatomy.
American Journal of Hygiene.
American Journal of Physical Anthropology.
American Journal of Physiology.
Anatomical Record.
Endocrinology.
Genetics.
Journal of Bacteriology.
Journal of Biological Chemistry.
Journal of Comparative Neurology.
Journal of Experimental Medicine.
Journal of Experimental Zoology.
Journal of Immunology.
Journal of Infectious Diseases.
Journal of Medical Research.
Journal of Metabolic Research.
Journal of Parasitology.
Journal of Social Hygiene.
Physiological Reviews.

The questions asked, together with a brief summary of the replies, are as follows:

The first three questions included the name of editor, name of the journal and the scientific field covered.

(4) *How is journal managed?* The replies include management by an editor or editorial board, in a variety of ways. Business management and editorial management are often separated. Ownership may be private or vested in a scientific institution or a scientific association.

(5) *Of what society or institution may it be considered an official organ?* It is the official organ of a society or institution in 13; not in 6.

(6) *Subscription price per year or volume?* The average is $5.13 per volume (range $2.50 to $7.50). In general, the lower rates are for highly subsidized journals or those with large circulation.

(7) *How many paid subscribers?* The average is 964 (range 250–3,000). Only one is above 1,800.

(8) *What special rate (if any) is allowed to society members or others?* Special rates (discount of 10 per cent. to 50 per cent.; in 1 case, of 100 per cent. to members) are allowed in 9; none in 10.

(9) *If subsidized, how and to what extent?* Subsidies are reported for 11, range from $250 to $7,500 annually (exact data not given in most cases). No subsidy to 7.

(10) *What restrictions are placed on authors as to space, illustrations, etc.?* Variable restrictions are reported in 12; none in 7.

(11) *How many manuscripts were rejected in 1923? Give chief reasons.* In 17 replies the number of papers rejected ranged from 2 to 36. In one additional journal, the number was "more than accepted." "Inferior quality" is the chief reason for rejection. "Too long" or "inappropriate in scope" are other reasons given. No reply indicates that appropriate articles are rejected for lack of space.

(12) *How many free reprints are given?* The number is 100 in 5 cases; 50 in 8; 25 in 2; and none in 4 cases.

(13) *Do you personally believe reprints desirable?* Yes in 15 cases; no in 3.

(14) *Do reprints benefit or injure your journal subscription list? Why?* Six believe they help, largely by advertising; 3 think they injure; 10 can see no appreciable effect.

(15) *Do authors receive an honorarium other than reprints?* All say no; one adding "not as a rule."

(16) *Where is the journal printed?* Several are printed by the Williams and Wilkins Co. (Baltimore) and the Wistar Institute (Philadelphia); the others scattering.

(17) *What is the average printing and distribution cost per page?* Ten replies were received. For these, the average cost per page for each issue is $5.94 (range $1.00 to $9.35). Dividing this by the number of copies printed gives the actual cost per page, which averages somewhat less than $0.009 (9 mills) per page. For the journal with the largest circulation (3,000), the cost is only $0.002 per page.

(18) *What is your office overhead expense per year?* (19) *What other expenses do you carry?* The combined cost of these items, as reported by 12, averages $1,445 (range $100–$4,500). Many small journals get free service.

(20) *What annual subsidy would be required to put the journal on the best efficiency basis?* Average of 17 estimates is $3,171 (range $0–$15,000). Only a few appear adequately provided for.

(21) *Do you believe an Association of Medical Scientific Journals would be advantageous? If so how?* Six say yes; 3 no; 6 doubtful. The affirmatives think costs might be reduced.

(22) *Would joint printing contracts be feasible?* Six say yes; 4 no; 7 doubtful.

(23) *Could standardization of page size, type, etc., be accomplished without detriment?* Eight say yes; 4 no; 6 doubtful.

(24) *Would it be desirable and feasible to have a Scientific Press, jointly financed or owned by the societies concerned?* Six say yes; 6 no; 6 doubtful.

(25) *Could the number of our scientific journals be reduced by broadening the scope of those remaining, without detriment to science and to financial advantage?* Five say yes; 10 no; 3 doubtful. The negatives urge that the tendency to specialization promotes the advancement of science.

(26) *Additional suggestions or comment.* Some of the more striking comments are: "Better support of high class periodicals is the most pressing current need of the biological sciences." "A serious effort should be made to publish only material of unquestioned scientific value." "Subject-matter might be better distributed among the various journals." "The standardization of human creative effort is undesirable."

The committee makes no recommendations upon the questions under consideration, but believes that the data above presented may be of general interest.

C. M. JACKSON

NATIONAL RESEARCH COUNCIL

SCIENTIFIC EVENTS

THE INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY[1]

THE fifth meeting of the International Union of Pure and Applied Chemistry was held in Copenhagen on June 26, under the presidency of Sir William Pope. Sixteen countries were represented by about one hundred delegates. The American delega-

[1] From *Industrial and Engineering Chemistry.*