

PRESIDENTIAL ADDRESS.

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By GEORGE GERALD HENDERSON, M.A., D.Sc., F.R.S.

The Publication of Chemical Literature.

THE Report of Council indicates sufficiently clearly that the chief work for which the Chemical Society exists has grown very considerably during the past year. The number of original communications published in the Journal is 24% higher than in 1930 and the number of chemical papers abstracted by the Bureau and published in British Chemical Abstracts "A" is also very much greater than in the previous year. The consequent financial burden is, unfortunately, too great for the Society as its income stands at the present time and it is not going too far to state that at no other period in its long history has the Society been faced with such great difficulties in carrying on its work. Hence the necessity has arisen for careful consideration of the present position regarding publication of new chemical knowledge generally, of possible closer co-operation with other societies having similar objects, and of possible new sources of income to be of immediate help to the Society in its present difficulties.

Last summer the Society of Chemical Industry celebrated the completion of fifty years invaluable service to applied chemistry amidst a chorus of well-deserved congratulations and good wishes. The Society of Public Analysts was founded in 1874 and subsequent to the foundation of the Society of Chemical Industry a number of others, for example, the Biochemical Society, the Faraday Society, and the Institution of Chemical Engineers, came into existence, each of which plays its part in fostering the development of different branches of our science. As pointed out by Professor Morgan in a recent address, "a survey of contemporary movements suggests that sectionalism is on the increase and that as chemists undertake additional services for the community new societies will arise to deal specially with these technologically important new aspects of chemical science. This tendency must involve a flight from membership of the older more fundamental societies." However that may be, one cannot help thinking that in different circumstances the need for the foundation of so many independent societies concerned with chemistry in its different branches might not have become apparent. It appears unquestionable that the founders of the Chemical Society intended that its activities should cover the whole field of chemistry, applied as well as pure, for, as stated in the Charter, it was established "for the general advancement of Chemical

Science, as intimately connected with the prosperity of the manufactures in the United Kingdom, many of which mainly depend on the application of chemical principles and discoveries for their beneficial development, and for a more extended and economical application of the industrial resources and sanitary conditions of the community." It is also clear that this view of the functions of the Society is still maintained, for the explanatory leaflet which it issues opens with the statement that the Chemical Society aims at encouraging the development of chemical science in all its branches and at providing a regular and complete record of all new additions to chemical knowledge.

Previous to 1885, the Chemical Society included among its Abstracts a section dealing with technical chemistry, but at the Annual Meeting in 1886 the President, in announcing the decision of the Council to discontinue this custom, stated that "whilst it has been felt all along that these Abstracts, on account of their brevity, only very imperfectly fulfilled their object, a more liberal treatment and greater completeness were considered to be incompatible with the means at our disposal." Moreover, very few papers dealing with applied as distinguished from pure chemistry appeared in the Journal. As time passed it became increasingly evident that, if technological chemistry were to benefit by the stimulus afforded by a journal devoted to its interests, the institution of a society which would publish such a journal was inevitable. To meet this demand the Society of Chemical Industry was inaugurated in 1881, and its subsequent history bears eloquent testimony to the wisdom and foresight of its founders. Much of the success of that society is undoubtedly due to the formation of local sections, which enjoy a considerable measure of independence and are directly represented on the Council; it is certain that the share which members take in the activities of the sections serves to keep alive their interest in the affairs of the Society as a whole. Looking back on what has happened since 1841, the thought arises that if those of our predecessors who managed the affairs of the Chemical Society during the first forty years of its existence had taken a broader and a longer view, some at least of the various societies to which I have referred might not have been founded, and we might now have one great chemical society, with a membership of 10,000 or more, with the members organised into divisions dealing with the different branches of chemistry and possessing a large measure of autonomy, and with local sections meeting in the principal centres of education and of industry. We might, in fact, have anticipated the policy which has been put into successful operation by the American Chemical Society. Probably the suggestion that an endeavour should be

made to bring about the merging into one organisation of all the various societies concerned with chemistry will be considered impracticable, but at least, if only for economic reasons, no effort should be spared to promote the closest possible co-operation between them, and at any rate so far as the Society of Chemical Industry is concerned a very good case could be made out for its re-union with the Chemical Society. Of course, if an effort were made to bring this about, many difficulties would have to be faced, but given mutual goodwill, these should not be insurmountable. It is hardly necessary to remind you that an important step in this direction has already been taken; I refer, of course, to the formation in 1923 of the "Bureau of Chemical Abstracts." The Bureau is a joint committee of the two Societies and is responsible for the production and publication of British Chemical Abstracts "A" and "B," with the result that overlapping has been prevented and consequent economies effected.

As regards the present state and the future prospects of the Chemical Society, in certain respects there is every reason for satisfaction, but other aspects of the position give rise to anxiety. For purposes of comparison I quote some statistics from the reports of the year 1885, in which I was admitted to the Fellowship, of 1913, the last normal year before the War, and of last year :

	1885.	1913.	1931.
Fellows	1,428	3,201	3,775
Papers published in Transactions ...	104	238	462*
Abstracts	2,360	5,978	12,381
Income	£3,743	£9,235	£10,261
Expenditure	£3,118	£9,473	£11,473

* Exclusive of 28 "Notes."

The increase in the number of Fellows was continuous during the period from 1885 to 1921; in the latter year the membership was 3912, and after that did not show much change until 1926, when the figure was 4093. Since then we have to record a regrettable decrease each year until at the end of 1931 the number of Fellows was 3775. This decline appears to be due not so much to a falling off in admissions—at least until 1930, when only 165 new members were admitted as against 218 in the previous year—as to a relative increase in the number of resignations and removals. On the assumption that the number of chemists in this country amounts to at least 10,000, it is evident that, for some reason or other, the majority do not support the Society by becoming Fellows.

The great and world-wide development in the output of research work is reflected in the number of papers published in the Journal and especially in the number of Abstracts. In this connexion it is

interesting to recall some observations made by the President at the Annual Meeting in 1886. In calling attention to the number of papers communicated to the Society in 1885, *viz.*, 104 (the largest obtained up to that date except in session 1880—81, when it was 113), he remarked "The future will show whether this satisfactory result really indicates the wished-for awakening of activity in the direction of chemical research." He also referred to the laments of some of his predecessors over the apparent stagnation of scientific chemistry in this country compared with what was being done elsewhere, and pointed out that its development in so marked a degree in other countries took its rise in the Universities, where the study of chemistry was pursued on a level with that of other sciences, and that in the course of time its general diffusion gave a powerful impetus to the progress of technical chemistry in its various branches. "This latter fact," he said, "being now fully recognised in this country, great efforts are being made to stimulate the cultivation of scientific chemistry, and the establishment of late years of numerous laboratories throughout the country cannot fail in due time to contribute towards the general advancement of our science." Referring also to the grant of a Charter to the Institute of Chemistry, he reminded his audience that some ten years previously a very strong desire was manifested by some of the members that the Chemical Society should assume an authoritative position for regulating and advancing the professional status of chemists with the view of ultimately obtaining official recognition of chemistry as a profession, but it was found that the Society was debarred by the articles of its Charter from carrying out the desired object, and subsequently the Institute was founded. He added "we may anticipate that the incorporation and official establishment of the Institute of Chemistry will exert a direct and powerful influence on the development of chemical education, which in its turn must assuredly promote the progress of pure chemical science."

Chemical research in this country is now actively prosecuted in the Universities and Colleges, in the Government Laboratory, in the laboratories of several Government Departments, especially (under the auspices of the Department of Scientific and Industrial Research) in the Chemical Research Laboratory at Teddington and by a large number of industrial research associations, by public analysts and consultants, and last but not least by many industrial organisations, although, for obvious reasons, much of the research carried on in works laboratories does not find publication. A similar activity prevails in most civilised countries, and the mass of published work grows from year to year. The Chemical Society and the Society of Chemical Industry discharge to the best of their power the duty of

distributing information concerning the advances made in every branch of chemistry, pure and applied, but the consequent drain on their resources is very heavy. The net cost of the Chemical Society's publications last year was £6088, and the Society of Chemical Industry spent an almost equally large sum. It is practically certain that the volume of chemical literature which must be abstracted, as well as the number of papers communicated to the two Societies, will in the future increase rather than diminish, and the cost of publication will become still heavier, whilst a number of the other societies concerned with chemistry are also spending a considerable portion of their income in publication. The position is summed up in the following excerpt from an editorial in "Chemistry & Industry." "The publication of new research and its subsequent abstracting are vital to the progress of chemistry; there are very many chemical organisations in this country, some large ones and more small ones, some publishing abstracts of a very limited part of the literature, more publishing none. The bulk, almost the whole, of the abstracts here published, are prepared and paid for by the Fellows of the Chemical Society and the Members of the Society of Chemical Industry. These two Societies are those which perform the valuable national work of publishing the chemical knowledge, on which the progress of chemistry and its application to industry depend. A combined register of these Fellows and Members would be a list of those who are providing the profession with the means of keeping up the knowledge of the science on which the profession exists. On these two Societies alone falls the financial burden of this great work, work which is for the benefit of every chemist in the country. It is singular and anomalous that hundreds, perhaps even thousands, of professional chemists exist here, who make no contribution to this burden, who do nothing to help the cause of chemistry in the way that is most urgent, most necessary and most expensive. Those chemists who are not members of either of these two societies are no doubt extremely grateful to them; their gratitude may be made manifest in several ways, but Professor Thorpe indicates one of the most useful: that all those who benefit by the scientific publications should make a contribution towards their expense" (*Chem. and Ind.*, 1931, 50, 277).

Several reasons may be advanced to account for the fact that so many chemists do not support one or both of the Societies. An obvious one is that our Journals are to be found in the general and departmental libraries of practically all Universities and Colleges, in the libraries of many chemical works and scientific societies, and in a number of public libraries, and are thus available for the use of non-members. Yet I cannot but believe that if those chemists who

have not yet joined one or other of the Societies were to give serious consideration to the subject, they would come to realise that an obligation rests upon them to support those organisations which are doing so much to help them in their professional work at the expense of those of their fellow chemists who are members.

Another reason for non-membership is that a large number of chemists find it to their advantage, whilst others believe it to be their duty, to join one or both of the professional organisations, the Institute of Chemistry and the British Association of Chemists, and in doing so they act rightly, for it is mainly owing to the efforts of the former that our profession has now a recognised status, and the latter acts for the benefit of its members in directions which the Institute cannot follow. The membership of the Institute is approximately 6000, that of the Association some 1400, although a considerable number of members of the Association are also members of the Institute. In addition to entrance or examination fees a Fellow of the Institute pays an annual subscription of £2 2s., an Associate £1 11s. 6d., whilst a Member of the Association pays an annual subscription of £1 1s. and a contribution to an unemployment insurance fund. A young chemist, probably with only a limited income, appears to grudge an additional subscription of £3 or £2 10s. respectively for the Chemical Society or the Society of Chemical Industry, although he would be wise to consider whether such a subscription should not be regarded as a profitable investment rather than as an unnecessary expense.

Various suggestions for the reduction of expenditure have been made, one of which is that the Bureau of Chemical Abstracts should cease to function and that the Societies should simply buy the requisite number of copies of "Chemical Abstracts" from the American Chemical Society for distribution to their members. For many reasons, amongst others the inevitable delay in the receipt of abstracts, this proposal is not likely to appeal to either of the Societies. Another suggestion which might be considered is that the annual subscription to the Chemical Society might be made a nominal sum to cover the privileges of the Fellowship, attendance and entertainment at meetings, use of the Library, etc., but independent of receipt of publications. For the latter the Fellow of the Chemical Society would then pay in addition for whatever publications he elected to receive according to the actual cost of publication. If a change of this sort were made, it might be possible to arrange for a subscription to cover joint membership of the Chemical Society and other Societies, carrying with it the right to use the library and other privileges of membership, except the receipt of publications, for any or all of which an additional charge would be made. This proposal

deserves consideration, although, as Professor Thorpe pointed out in his Address last year, it is perhaps attended with the risk of loss of income without any marked diminution in the cost of publishing Journals and Abstracts. I have already referred to a third proposal, namely, the union of the Society of Chemical Industry with the Chemical Society. Such a union would almost indubitably effect economies and in my opinion the idea should not be lightly set aside, although I admit that it seems almost revolutionary to propose that one great society should sacrifice its individuality by amalgamating with another. Even if the difficulties which stand in the way of bringing about a complete fusion of interests should prove to be too great, it should be as possible as it is desirable to arrange for a working partnership of the most intimate character.

I take this opportunity of indicating another direction in which a certain reduction of expenditure could be effected. If the volumes of the Journal of recent years are compared with those of an earlier period, there becomes apparent a tendency to publish the results of research work in more numerous instalments than was formerly the custom. The work described in each of these instalments requires at least some introductory discussion, and not infrequently a certain amount of repetition in the introductory part of such papers is almost inevitable, and thus some valuable space is occupied, which otherwise would be available. Of course when an extensive research is under way it is desirable that as each section of the work is completed the results should be placed on record, but I do not think that much, if any, loss would be suffered if authors published their results in a more limited number of more comprehensive papers. It is always possible for an author to safeguard his priority by publishing a short communication indicating the subject of his research, the results already obtained, and the further work which he proposes to undertake.

The American Chemical Society claims for "Chemical Abstracts" that it is "a complete key to the chemical literature of the world": the estimated cost of production in 1930 was \$192,500, of which \$50,000 was furnished by the chemical industry of that country. Our own "A" and "B" Abstracts and also the Zentralblatt aim at covering much the same field, and in each case the cost is very great. If it were possible to arrive at some form of international agreement for the limitation of abstracting in different countries, the Societies concerned would be relieved of a heavy financial burden. If, for example, the Bureau undertook to abstract all chemical literature published in the Empire, the American, German, and French Societies might confine themselves to abstracting the chemical literature of the United States, of Northern Europe and of the Latin

countries respectively. The international abstracts envisaged would be issued to all subscribers from one organisation, the idea being to eliminate the immense amount of overlapping of effort and expenditure in the production of chemical abstracts in so many different countries. The cost of the international abstracts to the subscriber must not be more than that at present charged for either the English or the American. It is perhaps very improbable that such an international agreement could be reached, but even if this were the case, it should not be so difficult to come to a national agreement. If all the Societies concerned with chemistry in this country were to pool their resources in the matter of abstracting, it is more than likely that the total expenditure on printing and distribution would be materially reduced.

In the year 1931 the total expenditure on publications of the Chemical Society was over £13,000; the net expenditure was, in round figures, £6090. It is evident that, in order to balance its books, the Chemical Society requires a larger income. Moreover it could with great advantage spend much more than at present on its publications. Owing to the pressing need for economy the available space has had to be so reduced that many papers which appear in the Journal are little more than fairly full abstracts, from which details of experimental work are largely omitted and discussion of results so abbreviated that not infrequently it is difficult to grasp the author's view. Furthermore it is much to be desired that the Journal should be printed on better paper and in a more suitable format. These improvements would cost money, and where is a larger income to be found, or what further economies can be effected? A large addition to the membership would help, but the income derived from annual subscriptions will always be subject to fluctuations, and something more permanent is desirable. The Publications Fund has a capital of nearly £11,000, approximately half of which is the bequest of the late Sir Alexander Pedler and the other half was raised by my predecessor, Professor J. F. Thorpe, when he was Honorary Treasurer of the Society. Professor Thorpe's work in this connexion deserves cordial recognition and the thanks of all interested in the publication of the results of original investigations in chemistry. The capital of the Fund is, however, far too small for the chief work of the Society, *viz.*, publication of new knowledge in chemistry, to be independent of any sudden diminution in the Fellowship, and if it could be raised to (say) £30,000 the additional income would make the position very much more secure. From what sources can we get this increased capital at the present time? The position is really serious because, as I have already mentioned, any sudden diminution in the Fellowship would mean at any rate a

partial cessation of the work for which the Society has existed since 1841. Is it possible for the industry itself, the progress of which depends primarily on the advance of chemical knowledge, to come to our help? Already Imperial Chemical Industries have since 1928 contributed £100 per year towards the cost of our publications and I would plead for other firms to copy this example. If chemical industry in America is justified in assisting chemical publications there, then the industry in this country should help the Chemical Society in the way I have indicated. Further, I would suggest that the Institute of Chemistry might favourably consider assisting in the same way the publication of chemical literature. The Institute has a large income, which shows no sign of diminishing but quite the reverse. In 1930 the capital fund amounted to £22,238, the ordinary income to £11,718, and the extraordinary income to £980. The expenditure was very heavy, but nevertheless the Treasurer was able to invest £2,317 and still retain a balance of £502. Of course the membership also grows steadily, but an addition to the number of members does not necessarily involve a proportional increase in expenditure, and therefore a larger capital fund and a larger income derived from investments may be anticipated. The Institute has rendered invaluable service to the profession in many ways, and I do not think that the terms of its Charter preclude it from widening the range of its beneficent influence by giving a substantial annual contribution to the Publications Fund of the Chemical Society. In doing so it would indubitably promote the welfare of the profession, for it cannot be reiterated too frequently that the progress of chemistry is dependent upon the publication of the results of research work in all branches of the science. In making this suggestion I do not forget that under the library co-operative scheme the Institute has made an annual contribution of £250 towards the upkeep of the library for the last eight years, but on the other hand during the same period the cost to the Chemical Society has mounted from £1100 to £1800 per annum, and is almost certain to increase in the future. Valued assistance has been given by the Association of British Chemical Manufacturers, who contributed £250 a year for several years and have now promised £100 a year for the next seven years. Further, the Society of Chemical Industry gave a special donation of £50 for 1931 in addition to their annual contribution of £100. Grateful as we are for this help, we should welcome still more or larger subscriptions.

It has been suggested more than once that local sections of the Society should be instituted, and cogent arguments can be advanced in support of the proposal. But it must be borne in mind that in Great Britain and Ireland no fewer than 14 sections of the Institute

and 11 of the Society of Chemical Industry meet in most of the principal cities, and although some of the meetings are held jointly the total number is large. In Glasgow, in addition to the sections just mentioned, sections of the British Association of Chemists, of the Society of Dyers and Colourists, and of the Institute of Rubber Industry, and also the West of Scotland Iron and Steel Institute, the University Alchemists' Society, the Andersonian Chemical Society and the Royal Philosophical Society all meet periodically. The Calendar issued by the Association of Secretaries of Glasgow Chemical Societies gives a list of some 60 meetings arranged for Session 1931—32, and in my view any addition to this multitude of meetings would be simply oppressive. On the other hand I think that considerable advantage would accrue if local Committees of Fellows of the Chemical Society were appointed in each city where there is a section of the Institute or of the Society of Chemical Industry. It would be the business of these Committees to arrange with the secretaries of the other sections for some joint meetings for the reading and discussion of papers which in present circumstances are for the most part forwarded for the consideration of the Publication Committee of the Chemical Society without having been read or discussed—a state of affairs which is not altogether satisfactory. If it were possible to arrange that the President, or failing him a Vice-President or a member of Council, should preside at such meetings, so much the better. Moreover, these local Committees would be able to get into touch with younger members of the profession, and perhaps to arouse in them a more direct and personal interest in the affairs of the Society, which at present is sadly lacking in the case of many chemists who live remote from headquarters, and to whom the Society is only known as an organisation which issues certain chemical publications.
