SCIENCE

VOL. LXVII APRIL 20, 1928 No. 1738

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKeen Cattell and published every Friday by

THE SCIENCE PRESS

New York City: Grand Central Terminal.

Lancaster, Pa. Garrison, N. Y.

Annual Subscription, $6.00. Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

INTERNATIONAL RELATIONS IN SCIENCE[1]

IN this my introductory lecture, I take pleasure, at the very outset, in expressing my gratitude to the president of your university, to Professor Dennis and to the other authorities responsible for having addressed to me an invitation to come to you as lecturer on the Baker Foundation. I regard this invitation as a great honor, altogether beyond what I have deserved, and it will be my earnest endeavor, during my stay in your midst, to discharge the duties of this lectureship to the utmost of my ability.

The first of these duties in point of time is to deliver an introductory lecture on a non-technical subject. The choice of such a subject for the present occasion has caused me not a little difficulty. At the outset it seemed to me that since the purpose of the Baker Foundation is to bring over lecturers from other lands and thus facilitate intercourse between workers of different nationalities, I might perhaps suitably discuss the nature and extent of the intercourse between scientific men in different countries, both in the past and in the present. When I mentioned my plan to a friend who had lectured in a western university, he told me that the relations between European scientists would not be of any particular interest here, where a single nation stretches right across a continent. He further suggested that Americans are not so well informed about the national peculiarities of Europeans as I imagined, that they have no sympathy for our difficulties and are indeed somewhat impatient of European squabbles and jealousies. I was advised to discuss instead some more concrete chapter in scientific research and to treat it in a popular fashion. This suggestion, that America stands aloof from European affairs, did not, however, agree with my own impressions, previously gathered from American colleagues visiting Europe. The very fact that your university makes a practice of inviting foreign lecturers and the assurances of two of my predecessors in the Baker lectureship, convinced me that here in the east, at any rate, you are not only well acquainted with conditions in Europe, but also understand our difficulties, so that I still hope I may bring before you certain general considerations affecting scientific progress, and thus discharge my obliga-

[1] Introductory public lecture by Professor George Barger, of the University of Edinburgh, non-resident lecturer in chemistry at Cornell University.

tion, without discussing in detail any particular line of research.

Apart from its effect on the progress of science, the intercourse which I propose to discuss may contribute largely to the mutual understanding of nations. If the consent of scientific men, instead of that of parliaments, were required for the making of wars, the peace of the world would not indeed be assured, but I venture to think—I certainly hope—that it would be less precarious than it is at present. Scientific research is one of the most international forms of human endeavor. Perhaps it might be considered second to music in this respect, since music is independent of human speech; we can enjoy the compositions of foreign composers without knowing their mother tongue. Yet for this very reason music does not greatly help us to understand other nations and the music of the east may even be unintelligible to the west. Athletic contests and games like chess bring about the meeting of competitors from distant lands, but these international competitions affect only a handful of champions. The Olympic games no longer bring together the nations of the modern world as they united the communities of ancient Greece. But scientific phenomena are universal; they are the same all the world over. How often does the specialist worker remain isolated in his own country and find that his particular field is only cultivated by workers abroad! My further lectures will furnish many examples of this, as indeed all scientific lectures are apt to do. Let me, for the purposes of the present occasion, anticipate. The intense physiological action of extracts of the adrenal gland was discovered by two Englishmen and practically at the same time by two Poles. The isolation of epinephrin was then attempted by an Irishman and by an Austrian; it was accomplished in the United States by one of your countrymen and by a Japanese. The substance was next investigated by a Frenchman, an Englishman and by several Germans, one of whom synthesized it; it was also synthesized by an Englishman. Allusion to this chain of researches, extending over less than a decade, has already involved me in the mention of eight nationalities. Hence it is clear that international relations play a considerable part in scientific research.

Western science originated with the Greeks and in the Hellenistic period became concentrated at Alexandria; other civilizations, such as that of the Chinese, remained isolated, and facts known to them were rediscovered later in the west. In ancient times there was a good deal of intercourse among philosophers all round the eastern half of the Mediterranean. Already the Ionian Greeks of the fifth century B. C. were characterized by a love of travel for the sake of the "wonders" to be seen in strange lands. Thales (624–547 B. C.), the founder of Greek geometry and of Greek astronomy, traveled in Egypt, and Pythagoras also undertook extensive journeys. Mathematical discoveries, whether made in Asia Minor, in the east or in Magna Graecia in the west, became widely known by an intercourse facilitated by a common language and apparently not hampered greatly by political differences or even by wars; yet the harmful effect of war on scientific progress was early illustrated by the killing of Archimedes by a Roman soldier at the sack of Syracuse in 212 B. C.

The decay of the Roman empire was accompanied by that of Greek science, which passed at a later period to the Moors. Not until the Renaissance did the pursuit of science spread to the nations of the west, and then, for a time, it would seem to have been more international than other forms of human activity. In the school of medicine at Salerno and the earliest universities of Bologna, Padua and Paris, the universal use of Latin established a freemasonry among the learned, where accidents of nationality did not count and difficulties of communication were overcome. Vesalius, a Belgian, taught anatomy at Padua, Paracelsus traveled widely in troublous times, and science appeared wholly dissociated from politics. Although Spain was the chief nation concerned in the discovery of America, Columbus was an Italian, and the name of your continent is likewise of Italian origin.

The number of foreign students in medieval universities was great. A document of the year 1228, exactly seven hundred years ago, records the presence at Padua of French, English, Norman, Provençal, Spanish and Catalan students. This was only six years after the foundation of that university. Later the number of foreigners increased still further. They came "non ex propinquis tantum regionibus, non ex ultima solum Italia, sed . . . ex toto prope terrarum orbe." Ultimately twenty-two "nations" were represented, ten from beyond the Alps, twelve from various regions of Italy. Each "nation" elected one or more councilors who assisted the rector in the government of the university. Traces of this divisional arrangement of the students survive in certain Scottish universities. In the fifteenth century there were about a hundred French students at Padua, nearly as many English and Scottish, and over three hundred German. Even now the crests of students from many nations (that of Harvey among the number) may be seen in the old loggia and aula of Padua University and afford interesting testimony to the international character of medieval learning. Professorships were not infrequently held by foreigners;

it is early recorded that the highest office of the university, the rectorship, was held by a Pole in 1271.

At first the study of science was the work of a few devotees who communicated their discoveries by personal intercourse or in the form of books. To these men science was a passion or an obsession, in any case their main interest in life. In course of time the amateur also made himself felt. Otto von Guericke, burgomaster of Magdeburg, was presumably as much occupied with civic affairs as with his air pump; although King Charles II of England founded the Royal Society and sometimes attended its meetings, his main interest can not be said to have been scientific. The diaries of Pepys and of Evelyn give an interesting sidelight on the attitude towards science of the amateur of that period. One of your earliest statesmen, Benjamin Franklin, was distinguished for his important contributions to natural knowledge. Priestley, one of the discoverers of oxygen, was in later life much more interested in theology than in the constituents of the atmosphere. The importance of the work of amateurs, or at least of men not holding official positions, seems to me to have been specially characteristic of British science; I need only mention the names of Boyle and of Cavendish, both scions of noble houses, and of Joule, a brewer.

The growing interest in science led, in the second half of the seventeenth century, to the foundation of societies and academies, who published short communications in their proceedings. The Royal Society of London received its charter in 1662 and arose out of informal earlier meetings at Oxford. Its "Philosophical Transactions" were first published in 1665. About the same time were founded the Accademia del Cimento of Florence (1657), the Academy of Vienna (1652) and the Académie Royale of Paris (1666); the memoirs of the latter began in 1699; in 1700 the Berlin Academy was founded. At first the publications of these various societies preserved the appearance of private intercourse, for they frequently were in the form of letters addressed to the secretary. As an example I may refer to the important microscopic discoveries of Anthoni van Leeuwenhoek, who during the latter years of the seventeenth century wrote several hundred letters from his sleepy little town of Delft to the secretary of the newly founded Royal Society of London; a portion of these letters, published in Dutch, occupies four large volumes. Leeuwenhoek, employed as janitor at the town hall, became, in his spare time, an expert in the grinding of lenses and made his own very powerful simple microscopes, tiny instruments compared with the compound microscopes of a later date. His equipment was indeed in strange contrast to that of the chemical laboratory of this university, which, I understand, has a special section devoted to the application of the microscope to chemistry. Yet Leeuwenhoek's discoveries were of a fundamental kind; thus he first saw and figured infusoria and spermatozoa, and investigated the process of reproduction in various animals. Another famous microscopist of that time, Malpighi, an Italian, also communicated his discoveries to the Royal Society; his original letters, with those of Leeuwenhoek, form an interesting part of the archives of the society.

One of the effects of the foundation of national academies was an increased use of the native tongue in scientific communications, and instead of, or in addition to Latin, it has now become necessary for the man of science to know several modern languages. The abandonment of Latin as the universal language proved an obstacle to scientific intercourse. When lectures at the universities were no longer given in Latin, it became more difficult to obtain teachers from abroad. The change made itself felt in the beginning of the eighteenth century. In the middle of the previous one it was still possible to call to Leiden a Hanoverian physician, Franciscus Sylvius, to teach chemistry and medicine; he indeed founded there the first university chemical laboratory, a humble precursor of the magnificent building in which we are now assembled. When later, early in the eighteenth century, the school of medicine, to which I myself belong, was developed at Edinburgh, the use of spoken Latin, which, as we have seen, had done so much for the medieval universities, had declined, the teachers were all Scotsmen, who had indeed been influenced by the great Boerhaave, of Leiden, but did not use Latin to any large extent in their own lectures. As a written language Latin survived to a much later date, particularly in academic publications, such as doctoral theses which at Edinburgh, for instance, continued to be in Latin until about one hundred years ago; in Germany Latin was still employed for this purpose until about the middle of the last century. To-day the use of Latin in scientific publications is rare and almost restricted to a few botanical and zoological works of reference chiefly of interest to the systematist. Its use as a spoken language is extremely rare; apart from ceremonial occasions at the older English universities, I have myself heard it only twice at international gatherings; on both occasions it was used by Swedes.

The use of the vernacular instead of Latin caused at least a relative setback in the intercourse between the scientific men of various nations. The growth of nationalism in the nineteenth century acted in the same direction, and it was not until travel had been facilitated through the spread of railways that the abandonment of Latin as a universal language was

compensated for by the greater ease of communication.

In giving facilities to advanced students from abroad, for some time Paris and later on the German universities took a leading part and thus contributed greatly to the furtherance of international relations, not the least by spreading a knowledge of French and German among scientific men. Thus the laboratory of Wurtz attracted many foreign chemists to Paris, as did that of Liebig to Giessen. The Pasteur Institute later drew bacteriologists to Paris and towards the end of the century it became comparatively common, particularly for American and English scientific men, to spend a year or so in research at a foreign university. They thus acquired a knowledge of the spoken language, which sometimes proved useful in strange circumstances. When, as the result of the Armistice, the allied chemical experts inspected certain German chemical factories, which had been used for the production of munitions of war, there was at least one occasion when an English and a French chemist met a German expert and the victors had to speak the language of the vanquished, for German was the only language known to all. Personally, I remember a chemical congress held a few years after the war, at Cambridge. England and France were largely represented; there were no Germans; there was a distinguished chemist from Japan who had studied in Germany and spoke its language fluently, but did not speak French. I took pleasure in introducing him in German to his French colleagues who too spoke that language fluently, and later admitted to me privately that it was a very useful one.

Among the advantages of foreign study may therefore be counted the acquisition of a thorough knowledge of a foreign language and some insight into the character of another nation. For various reasons residence abroad has however of late become less frequent, at least relatively so. The great development of your own universities has diminished the inducement to your students to spend some years in Europe, when they find at home an extensive choice of distinguished teachers and of excellent laboratories. The late war has had a great effect in the same direction, particularly on the younger workers in my own country. Formerly it was common for British students to spend a year or two at a German university, in order to obtain the degree of doctor of philosophy, but as a result of the late war practically all British universities have copied Germany in instituting such a degree; the effect has certainly been good in stimulating research among British students at home, but it has also tended to make the younger generation more insular and less acquainted with foreign life and thought. To some extent this is compensated for by the increased number of traveling fellowships, mostly founded by Americans; to these I will refer later.

We have seen that the disuse of Latin as a vehicle of instruction made the occupation of teaching posts by foreigners more difficult, but the practice has never died out. Thus in 1845 Prince Albert, the Consort of Queen Victoria, and a German who did much to stimulate scientific research in his adopted country, secured the migration to London of A. W. Hofmann. The nineteen years which Hofmann spent in England not only saw the production on a commercial scale of mauve, the first aniline dye, by his pupil Perkin, but Hofmann's stay in England did also much to further Anglo-German chemical relations. A number of German chemists settled in England, and Hofmann, after he had returned to his native country to occupy the chair of chemistry at Berlin, brought about the foundation of the German Chemical Society on the model of the English society, with which he became familiar during his years in London. While Hofmann was in England, another German organic chemist, Kekulé, was professor in Belgium, at the University of Ghent, and there worked out his famous benzene formula; he soon afterwards returned to Germany, but yet another German, Körner, migrated permanently to Italy, where he had many pupils and died only a few years ago. Such examples of migration are most frequent in the smaller European countries whose size restricts their choice of native candidates. Moreover, in a country such as Holland every university student knows English, French and German, so that there is no difficulty about a foreigner lecturing in one of these languages until he has learned the vernacular. There are always a few Germans among the professoriate of the Dutch universities. About thirty years ago an Englishman was appointed to a theological professorship at Leiden, and when he migrated to the United States, he was succeeded by a Norwegian; in this way the Dutch government attempted to avoid the *odium theologicum* which would have resulted from the appointment of a native. Dutchmen have from time to time occupied chairs abroad; thus van't Hoff left Amsterdam for Berlin, and within recent years Holland has supplied a professor of physics to Scotland, one to Germany and a professor of medicine to Vienna. Sweden has a German professor of chemistry, and an English professor of pharmacology, who came there after holding a chair in Switzerland. This latter country is, of all, the most ready to appoint foreigners; indeed, at one time a Swiss chair was frequently a stepping-stone to a more important one in Germany. Besides quite a number of Germans I can think of one or two Frenchmen, several Poles and Russians, two Americans, an Englishman, a Dutchman and an Austrian,

who have in recent times held Swiss professorships. Such a lively interchange would however offend the nationalism of the larger countries, where there is moreover a larger choice of native candidates and where the wars of 1870 and 1914 have produced a serious setback in international exchanges.

After 1870 politics entered into science as never before. French science became national, almost insular. Germans no longer studied in Paris, and for many years no French workers came to German laboratories; by slow degrees formal relations were ultimately resumed, more readily perhaps by the victors than by the vanquished. Franco-German susceptibilities became the chief stumbling-block in any international organization, as they did in European politics. Among the most noteworthy of these organizations are various congresses at which devotees of the same branch of science meet periodically for communication and discussion of their researches. One of the oldest and most successful of these is the congress of physiologists, started in 1889 on the initiative of Michael Foster and, except during the late war, held at intervals of three years. In a gathering of this kind the very choice of a meeting place is already influenced by politics. Just as the International Postal Union and the League of Nations meet in Switzerland and the International Court of Justice in Holland, so the congress of physiology began by meeting in small countries to avoid the jealousies of the larger ones. The first six meetings were held in Switzerland, in Belgium, again in Switzerland, in England, in Italy and again in Belgium. Although Germany has important physiological laboratories, it took eighteen years for the congress to come to that country (Heidelberg, 1907). In Paris, in 1920, no Germans were present, and in 1923 at Edinburgh, the great problem was to bring the late belligerents together again. The organizer of the latter congress received strong expressions of opinion from American and English physiologists that they would welcome the presence of German and Austrian colleagues, and invitations were accordingly sent to them, but this very fact kept away many Frenchmen and Belgians. Those who were present realized, however, how the restoration to the congress of its truly international character increased its scientific value, and three years later at Stockholm, it was generally agreed that the Franco-German difficulty was at an end among the physiologists. The next meeting is to be held in 1929 at Boston, and this decision illustrates yet another problem, not political, but geographic and financial, for it will have taken the congress exactly forty years to come to America.

This is far from satisfactory. American physiologists have attended previous meetings in large numbers, they have enhanced the scientific value of the congress by their communications, yet many of them could ill afford the expenses of a journey to Europe. Of course many European university teachers are even less able to defray the cost of transatlantic travel. There is here a difficulty inherent in the spread of science over two continents. Yet it is to be hoped that, in spite of this difficulty, a numerous contingent from Europe may find it possible to accept the warm invitation of their American colleagues. Thus the visitors will be able to learn at first hand about divisions of their subject which have been developed by American pioneer work and have as yet hardly been studied on the continent of Europe.

The political difficulties in other departments of knowledge have varied. It would seem that after the war international relations were most readily resumed in those sciences which are most remote from practical considerations. Where, as in chemistry, industrial or military applications interfere, progress has been less rapid.

Thus the late war had very little effect on astronomers, but industrial rivalry and chemical warfare have delayed a *rapprochement* among the chemists. Yet here also progress may be recorded. Thus, Professor Richard Willstätter, a leader of German chemistry, who, you may recall, visited this university less than a year ago, was invited to give the Faraday lecture to the Chemical Society of London, and generously allowed himself to be reelected an honorary fellow of that society. The celebration of the Berthelot Centenary in Paris last October, the most distinguished chemical gathering in which it has been my privilege to take part, was attended by nine German and by two Austrian delegates.

Mention should also be made of the International Research Council formed as a result of meetings in London and Paris in 1918 and at Brussels in 1919. It is practically a union of academies formed for the purpose of facilitating international cooperation in scientific work, and promoting the formation of international unions in different branches of science. The statutes of the Research Council were so framed that the central powers were excluded; their inclusion immediately after the great war would indeed have been surprising. Seven years later, however, at Brussels, in 1926, the Royal Society of London, at the instigation of Holland and Denmark, proposed that the five German academies should be invited to join the International Research Council, an invitation which has not yet been accepted. Its non-acceptance must be a disappointment to the Dutch and Danish academies, and to all who wish to see science dissociated from politics. The accession of the German academies might not be very important in itself, but

it would bring with it membership of the various unions. One of these is the "Union internationale de la chimie pure et appliquée." I purposely quote its French title, for since its inception it has been largely under French influence, and at its first four annual meetings there was no question of admitting German chemists. Any one acquainted with the magnitude of the contribution which Germany has made to chemical science will realize that the union thereby greatly handicapped itself. At the sixth meeting at Bucharest in 1925, a motion was finally carried expressing the wish that the International Research Council should modify its statutes, so as to permit the entry into the affiliated unions of all countries who are members of the League of Nations. Apart from the furtherance of individual scientific intercourse, which may be secured in other ways, this entry would bring about the cooperation of the Germans in the attempt to secure a uniform chemical nomenclature, which without them is a somewhat sterile labor, since the chief exhaustive chemical dictionaries and cyclopedias have been published as the result of German enterprise and diligence. For the advance of science in general, and of chemistry in particular, it is very much to be hoped that the German academicians will accept the invitation to join the International Research Council and thereby facilitate cooperation among the younger men.

On the whole the setback in scientific intercourse produced by the late war seems to me not so great as the magnitude of the struggle might lead one to fear; the cleavage between France and Germany is no greater than it was after 1870. Moreover, we can record the beneficent effect of certain agencies which have only come into being during recent years. Thus the League of Nations, in its public health work, has incidentally brought medical men together, and from the outset German delegates have taken part. For instance, international standards have been adopted for the strength of certain drugs, and the biological methods used in testing them have formed a subject of research by pharmacologists of various nations. While this country of yours is so remote from the turmoil of European affairs that it has remained outside the League of Nations, I need hardly say that American delegates have heartily cooperated in the health work of the league, as in some other of its activities. The attitude of your government has not prevented private individuals and foundations from exercising a powerful influence in favor of the resumption of international intercourse and the furtherance of scientific cooperation. It is peculiarly appropriate that in addressing you I should record here in the first place the work of the distinguished president of this great university, who was the first chairman of the League of Red Cross Societies, at Geneva and Paris. Then I would mention the work of the Rockefeller Foundation, particularly in regard to medical education. I well remember the impression produced by a large gift to the medical school of University College, London, a few years after the war. The idealism, shown by giving so large a sum to a foreign institution, aroused feelings of enthusiasm and admiration among British men of science, and since then medical education has benefited in other countries, regardless of politics. I take pleasure in recording that the medical school with which I am myself associated has received several benefactions from the Rockefeller Foundation. Moreover, by giving traveling fellowships regardless of nationality, the foundation has done much to further scientific intercourse, particularly by enabling the younger men to visit foreign laboratories. Thus the first visitor from Central Europe to work in my laboratory after the war was enabled to do so by a Rockefeller Traveling Fellowship, and several of my pupils owe experience gained in American laboratories to the same endowment. The annual review of the work of the foundation gives an idea of its world-wide activities. Thus in 1925, in addition to taking measures for the combating of hookworm disease, yellow fever and malaria, the foundation contributed to the progress of medical education in many countries, maintained a modern medical school in Peking, provided, directly or indirectly, fellowships for 842 men and women from forty-four different countries and financed the travel of fifty other persons, officials and professors. Such activities are indeed a powerful and beneficent factor in international scientific intercourse. The International Education Board, established in 1923 by Mr. John D. Rockefeller, Jr., is an agency working in the same direction. In theory it may include the United States in its field of work. In practice, however, its interests lie mainly in other countries, since the General Education Board, founded by Mr. John D. Rockefeller, Sr., in 1902, is limited by its charter to the advancement of education in the United States. During the year 1925–1926 the International Education Board made ninety-seven first awards of fellowships and twenty-nine renewals; the holders came from twenty-five different countries. The voluntary migration of three hundred or more young scientists under the auspices of the board since its foundation provides interesting indications where, in the opinion of the European and American sponsors, the more favorable conditions for research may be found at the moment. Thus in mathematics there is a marked migration toward France, Germany and Italy, in physics the trend is definitely toward England, the United States, Denmark and Germany.

The primary object of the Rockefeller Foundation the improvement of health and of education; a valuable secondary result of their activities is the promotion of international amity. This latter object is the primary one in the case of certain other benefactions, such as that of the thirty-two scholarships for American students, founded a generation ago by an Englishman, Cecil Rhodes, in his own University of Oxford. In this, as in other matters, Rhodes was a pioneer. His foundation has now a counterpart in the Commonwealth Fund, supported by gifts from the late Mrs. Stephen V. Harkness, which fund has established a number of fellowships for British graduates, tenable at American universities. I may perhaps quote from the official memorandum: "In creating these Commonwealth Fund Fellowships the Directors of the Fund have been impelled by a belief in the value of international opportunities for education and travel to young men and women of character and ability, and by a conviction that such opportunities offered to British students will promote the mutual amity and understanding of Great Britain and the United States." The John Simon Guggenheim Memorial Foundation indirectly furthers the same object by giving fellowships to American graduates for study abroad. All these factors are bound to have a favorable effect on the outlook of the younger generation of scientific workers; half a century ago they did not exist; in the main we owe them to your country.

National characteristics have an interest, comparable to that which the student of natural history takes in the various species of animals and plants. National psychology may be as interesting as the nesting habits of birds. Each nation has its own particular genius, without which the world would be the poorer. It is interesting to inquire which nations show the greatest aptitude for scientific research, and why they do so. I feel convinced, as a result of a statistical inquiry, into which I can not enter here, that the small nations are preeminent in this respect. Per million of population Holland, Switzerland and the Scandinavian countries at present seem to contribute more to the progress of science than any of the larger nations. Why this is so it is difficult to say. It is also interesting to speculate on the reasons which make pure mathematics flourish in Italy and in Sweden, music and organic chemistry in Germany, biochemistry and psychology in the United States, physiology in Britain. Whilst we need not agree wholly with the opening words of Wurtz's dictionary of chemistry, which claims this science as French, and Lavoisier as its founder, we must recognize that we owe bacteriology to Pasteur and to France. The various nations have each their peculiar aptitude which by itself constitutes a reason for furthering international relations in science; my main reason for having brought this subject before you is, however, a desire to promote, in the words of the Commonwealth Fund Memorandum, "mutual amity and understanding." This object has already appealed to a number of your citizens; with the westward trend of civilization it is all the more desirable that the difficulties of an enfeebled Europe should be understood by America, which has become the economic mistress of the modern world, just as Rome in the third century B. C. became the political mistress of the Mediterranean. Europe, like Greece, has suffered from internal strife, yet the influence of Greece was not extinguished by the loss of political independence; the Academy survived for seven centuries, and the migration of Greek scholars began the Renaissance. Similarly, the influence of Europe will survive her economic adversity; America will doubtless become even more interested in European affairs, just as Rome looked more and more to Greek civilization.

I hope I have not wearied you with the dissensions of European men of science. In discussing them I have had in mind the words which mark so impressively the tomb of your great countryman, Grant, on the bank of the Hudson River. These words, used after a great crisis in your political history, I would apply to scientific affairs of to-day: "Let us have peace."

GEORGE BARGER

CORNELL UNIVERSITY

SCIENCE WEEK IN NEW YORK

DECEMBER 27, 1928, TO JANUARY 2, 1929

THOSE who are engaged in the preparation for the coming eighty-fifth meeting of the American Association for the Advancement of Science and Associated Societies, which will be held in New York City from December 27, 1928, to January 2, 1929, are endeavoring to arrange a week's program so attractive and interesting that the members of the association and the societies will be more than usually tempted to extend their individual visits to New York over the entire week from Thursday evening, December 27, to Wednesday evening, January 2.

With the commodious facilities afforded by several new, large, medium-priced hotels, recently constructed in the city, the local committee hopes to secure favorable weekly—and, if possible, half-weekly—rates. The American Association program will begin with the opening session on Thursday evening, December 27, and will conclude with a very interesting general address on Wednesday evening, January 2. Thus ample time will be afforded the members of the asso-