the extreme ultra-violet and there is a considerable blank before their lines reappear in the Schumann territory. It is of interest to inquire if these spectra present that similarity of structure which is a fundamental characteristic of X-ray spectra of the heavier elements.

The nature of modern atomic models might lead one to expect certain rather abrupt changes with decreasing atomic number in the appearance of spectra of elements lighter than Neon. These changes Millikan has observed. He attempts to bring these spectra under the X-ray classification by arbitrarily designating certain lines as the $L\alpha$ radiation of the corresponding substances. The wisdom of this course seems to me somewhat doubtful, for though there is probably no discontinuity between the mechanism which produces optical spectra and that to which the X-rays owe their origin, yet the structure of spectra of the lighter elements seems to resemble the arrangement of X-rays so little that the same nomenclature cannot be employed in both cases with profit. Even where the radiating mechanism is simple as in hydrogen, there is small advantage in calling the Ritz series a K series or in designating the Balmer series as an L series. However, this objection is only a matter of taste; certainly it in no way detracts from the importance to be attached to Millikan's discovery, for by purely spectroscopic methods he has made a most important advance on the road connecting the region of X-rays with the rest of the spectrum.

Thus we see that the extreme ultra-violet has grown from an obscure corner of spectroscopy to a region of real importance, and that its study has developed from a scientific tour de force into investigations intimately connected with the most fundamental matters.

And now, before I close, let us look back over these thirty years to the man who began it all; *Victor Schumann*, slow, exact, infinitely patient, without any brilliant generalizations in his head but absolutely sound in his conclusions. Perhaps even the atom builder may pause a moment to contemplate him, and may profit by the process.

THEODORE LYMAN

HARVARD UNIVERSITY

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORT OF THE COMMITTEE[1] ON AN INTERNATIONAL AUXILIARY LANGUAGE ACCEPTED BY THE COUNCIL AT TORONTO, DECEMBER 29, 1921

THE present report makes no attempt to discuss what might be the detailed requirements of an international auxiliary language, nor even to consider alternative solutions already suggested. The committee has interpreted its immediate function as in no sense that of a judge to pass on such matters or even to assemble them for critical review at present, but it aims simply to present herein as concise and constructive a view as possible of the present state of public interest in the problem and to recommend what should be the attitude and activities of the association with respect to serious studies in this whole field, leaving it entirely to the results of such studies, if undertaken, to speak for themselves.

The subject of international language is an old one and a great deal of effort has already been expended upon it, but chiefly by individuals or by organizations formed purely for this purpose. It is only in the last few years that there has been any general movement on the part of governmental, scientific or academic bodies to take the subject seriously and follow it systematically.

The present organized movement in this direction may conveniently be considered as dating from the adoption by the International Research Council in July, 1919, at Brussels, of the following resolutions:

(*a*) That the International Research Council appoint a committee to investigate and report to it the present status and possible outlook of the

[1] Authorized by the Council at St. Louis, December, 1919, and appointed April, 1921: S. W. Stratton (chairman), director, United States Bureau of Standards; Carl L. Alsberg, director, Food Research Institute, Stanford University; V. A. C. Henmon, professor of education and director of School of Education, University of Wisconsin; John C. Merriam, president, Carnegie Institution of Washington; C. E. Seashore, professor of psychology and dean of the Graduate College, University of Iowa.

general problem of an international auxiliary language.

(*b*) That the committee be authorized to cooperate in its studies with other organizations engaged in the same work, provided that nothing in these resolutions shall be interpreted as giving the committee any authority to commit the council to adhesion to or approval of any particular project.

The activities of the committee appointed under these resolutions have thus far been devoted chiefly to awakening interest and securing cooperation through the national scientific, academic, educational, technical and commercial organizations of the individual countries, it being felt that a broad and intelligent interest in the subject within these national academies, societies and associations is a necessary prerequisite to any effective international action toward practical results.

Since the creation of the above-named committee a number of other important public bodies have taken definite action looking in the same general direction. Thus, on September 13, 1921, the following resolution was presented in the Assembly of the League of Nations by delegates representing twelve states:[2]

The League of Nations, well aware of the language difficulties that prevent a direct intercourse between the peoples, and of the urgent need of finding some practical means to remove this obstacle and help the good understanding of nations;

Follows with interest the experiments of official teaching of the international language Esperanto in the public schools of some members of the League;

Hopes to see that teaching made more general in the whole world, so that the children of all countries may know at least two languages, their mother tongue, and an easy means of international communication;

Asks the Secretary General to prepare for the next Assembly a report on the results reached in this respect.

[2] Lord Robert Cecil (South Africa), Jonnesco (Rumania), Emir Zoka-Ed-Dovleh (Persia), La Fontaine (Belgium), Benes (Czecho-Slovakia), Restrepo (Colombia), Tsai Fou Tang (China), Enckell (Finland), Fan Noli (Albania), Adatei (Japan), Escalante (Venezuela), Maharajah Knengarje (India), Askenazi (Poland).

The special committee[3] dealing with the inclusion on the agenda, of motions submitted to the Assembly reported to that body on September 15, 1921, with regard to this motion, as follows:

The above-mentioned delegates have proposed the introduction of Esperanto, as an auxiliary international language, into public schools, in order to facilitate direct intercourse between all nations throughout the world.

The committee are of opinion that this question, in which an ever increasing number of great states are interested, should be attentively studied before it can be dealt with by the Assembly. The question was referred to a committee last year and a short report was submitted, recommending that the Secretariat of the League should investigate the experiments already made and ascertain the actual results attained.

The committee proposes *that the question should be placed on the agenda of the next Assembly* and that the Secretariat of the League should in the meantime prepare a complete report, accompanied by the necessary documentation, on the lines indicated in the draft resolution.

In accordance with the wishes of the signitories, the Report of Committee No. 2 (document 253, of December 17, 1920) and the Report of the Under-Secretary-General upon his mission to the Congress at Prague will be transmitted to the members of the League in due course.

This report by the Under-Secretary-General (Dr. I. Nitobe) referred to above, consists of three sections, viz.: (I) An Account of the Thirteenth International Congress of Esperantists at Prague, July-August, 1921; (II) Observations on the Esperanto Movement; (III) The Language Question and the League of Nations. Nearly the complete text of the last section was printed and distributed to delegates during the last Assembly, as document A 72, 1921, XII, 14 Sept., 1919, copy of which is hereto attached as Appedix A.[4] The whole report will undoubtedly be available later.

The first national scientific body to take up

[3] Lord Robert Cecil (South Africa), *chairman;* Restrepo (Colombia); Schanzer (Italy); Tang Tsai Fou (China); de la Torriente (Cuba); Trygger (Sweden); Viviani (France).

[4] Copies of these appendices may be secured through the National Research Council, 1701 Massachusetts Avenue, N. W., Washington, D. C.

the question seriously was the British Association for the Advancement of Science, which, in response to the call of the International Research Council, appointed, through its section on Educational Science at its Bournemouth meeting, September, 1919, a committee "to Enquire into the Practicability of an International Auxiliary Language." At the Edinburgh meeting, September, 1921, this committee presented a comprehensive report of its studies to date, covering chiefly comparisons of Latin, as typifying classical languages; English, as typifying modern languages; and Esperanto and Ido, as typifying the artificial group. The committee briefly summarizes its conclusions as follows:

(1) Latin is too difficult to serve as an international auxiliary language;

(2) The acceptance of any modern national language would confer undue advantages and excite jealousy;

(3) Therefore an invented language is best. Esperanto and Ido are suitable but the committee is not prepared to decide between them.

The committee was continued and is understood to be making a more detailed study of artificial languages. The 1921 report of the committee is hereto appended as Appendix B.[4]

During the past year both the French and the Italian Associations for the Advancement of Science have likewise appointed committees on the international language question, but as yet these committees have made no reports.

Experiments in the teaching of Esperanto abroad, as a regular subject in the public school curriculum, are rapidly multiplying and being taken more seriously. This last year, for example, it was introduced as an optional subject in all the public schools of Milan, Italy, in the eighth year, being actually taken by some 2,000 students, while it has been made a compulsory subject for the present school year in all of the public schools of Geneva, Switzerland, for the seventh year of the course, representing some four hundred students. A brief published account of similar experiments in the north of England is herewith included as Appendix C.[4] Chambers of commerce and labor organizations are also showing a steadily growing interest in the matter, as more fully outlined in Dr. Nitobe's report (Appendix A.)

In the United States, the following academic bodies have already appointed committees on the subject: American Association for the Advancement of Science, American Council on Education, American Classical League, American Philological Association, National Research Council. The American Council of Learned Societies has authorized the appointment of delegates to confer with the last-named committee in an attempt to work out a plan of cooperation between the two councils. This seems of paramount significance because of the position which these two councils occupy as the American representatives, respectively, of the International Research Council and the International Union of Academies, which latter two organizations constitute the recognized international authorities in natural science, on the one hand, and in humanistic studies, on the other.

It is interesting in this connection to note that the initiative in the present question seems to have come from the natural scientists, chiefly out of their interest as prospective users of such a language, although they have indicated throughout that they clearly recognized the technical side of the question to lie squarely in the proper field of the linguist, to whom they turn for help, much as the engineer and manufacturer have in the past turned to the worker in pure science, insisting that he help them in their practical needs with his expert knowledge from the theoretical side, even though their so-called applied science might not attract him as an aim in itself.

It seems to your committee that, to attain useful practical results in this subject, two things are essential:

First, a searching fundamental study of the principles involved and experimental data available;

Second, authoritative international agreement, both as to linguistic details and as to the practical measures to be taken.

In certain general aspects of the first requirement, members of the American Association may be of direct assistance, as, for instance, the physicist, in the recording and analysis of the sounds in speech, and the psychologist, in the measurement of mental phenomena. Also, in each special field of science and technology,

the working out of technical vocabularies will call for close cooperation of all concerned. But we must naturally look to the linguist and the philologist for the greater part of the general framework of fact and interpretation. However, it is just in such new frontiers of knowledge that thorough and intimate cooperation by all groups is most apt to be fruitful.

With regard to the second requirement, the American Association may make its influence most potently felt through vigorous moral support of the project in general, and especially of the leadership of the work by the two national councils above mentioned, as the logical path for expression of natural academic thought in the international field.

In order to give expression to the position of the association on this general problem your committee recommends the adoption of the following resolutions:

WHEREAS, All the sciences are alike interested in unifying the fundamental tools of thought, and have been notably successful in so doing, with respect to our system of numbers, the Arabic numerals, the metric system, the measurement of latitude and longitude, angular divisions, mathematical symbols, chemical formulæ, time and the calendar, notation in music, and other technical usages; and

WHEREAS, There appears to be a generally expressed need for a suitable international auxiliary language for the prompt and world-wide diffusion of scientific data, and for intercommunicating between nations differing in languages;

THEREFORE, BE IT RESOLVED, That the American Association for the Advancement of Science:

(*a*) Recognizes the need and timeliness of fundamental research on the scientific principles which must underlie the formation, standardization, and introduction of an international auxiliary language, and recommends to its members and affiliated societies that they give serious consideration to the general aspects of this problem, as well as direct technical study and help in their own special fields wherever possible;

(*b*) Looks with approval upon the attempt now being made by the National Research Council and the American Council of Learned Societies to focus upon this subject the effort of those scholars in this country best fitted for the task, and to transmit the results to the appropriate international bodies;

(*c*) Indorses the heretofore relatively neglected problem of an international auxiliary language as one deserving of support and encouragement;

(*d*) Continues its Committee on International Auxiliary Language, charging it with the furtherance of the objects above enumerated and reporting progress made to the association at its next meeting.

S. W. STRATTON,
Chairman

THE PSYCHOLOGICAL CORPORATION[1]

THE Psychological Corporation has been incorporated under the laws of the State of New York. The second article of the charter reads:

> The objects and powers of this corporation shall be the advancement of psychology and the promotion of the useful applications of psychology. It shall have power to enter into contracts for the execution of psychological work, to render expert services involving the application of psychology to educational, business, administrative and other problems, and to do all other things, not inconsistent with the law under which this corporation is organized, to advance psychology and to promote its useful applications.

So far as is known, this is the first corporation organized under the provisions of the business corporation laws of any state whose objects are the advancement of science and whose earnings must be devoted to scientific research. There are, of course, membership and charitable corporations not for profit and exempt from taxation, but the Psychological Corporation proposes to earn by its services the money that it will use for psychological organization and research.

Further provisions of the charter provide that no dividend in excess of $6 per share shall be paid during any calendar year and empower the American Psychological Association to take over any or all of the stock on payment of $100 per share. The stock is held in the first instance by psychologists active in the work of the corporation. It may be noted

[1] Statement prepared by the president of the Psychological Corporation.