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"*To the solid ground*
Of Nature trusts the mind which builds for aye."—WORDSWORTH.

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International Science.

ONE of the most important developments of scientific activity during the latter half of the nineteenth century was the promotion of the exchange of scientific ideas between different countries by means of international associations. Some of these were congresses which met at intervals of three or four years, when scientific communications were read and discussed, and, what was of still greater importance, an opportunity was afforded for those engaged in similar studies to make each other's acquaintance and understand each other's point of view. Some associations were, on the other hand, more especially concerned to secure the co-operation of different nationalities in carrying out observations of particular natural occurrences on a uniform plan, or with standardised instruments, so that the results could be discussed as a whole and no portion of the field of work should be entirely neglected.

The outbreak of War in 1914 caused an abrupt interruption to this friendly intercourse, which had up to that time exercised a very favourable influence in the progress of science. On the occasion of previous hostilities, the conclusion of peace was always followed by a renewal of scientific *camaraderie*, but this did not occur after the last and most disastrous of wars. The policy of the High Military Command of the Central European powers in waging war with a rigour previously unknown in modern times had imported unprecedented bitterness into the struggle; moreover, it must be remembered that, for the first time, scientific men themselves were brought into the conflict instead of continuing quietly to work in their laboratories, and maintaining correspondence with those of other nationalities, as was formerly the case. It is not surprising, therefore, that when the War was over many scientific workers in the allied countries hesitated

to renew the relations that had previously existed, even though it seemed scarcely just to make their former scientific colleagues responsible for the conduct of their countries' military chiefs.

The subject was discussed at an Inter-allied Conference of men of science held in London in October 1918, about a month before the Armistice, and resolutions were passed. The most important, Article I., was in the following terms: "It is desirable that the nations at war with the Central Powers withdraw from the existing conventions relating to International Scientific Associations in accordance with the statutes or regulations of such Conventions respectively as soon as circumstances permit, and that new associations deemed to be useful for the progress of science and its applications be established without delay by the nations at war with the Central Powers, with the eventual co-operation of neutral nations."

A further conference was held at Paris towards the end of November 1918, when details were discussed and an executive committee appointed to prepare a scheme. As a result, an International Research Council was convened at Brussels in July of the succeeding year, and definite statutes of convention were adopted. In these the purposes of the International Research Council are declared to be (*inter alia*): (1) To co-ordinate international efforts in the different branches of science and its applications. (2) To initiate the formation of international Associations or Unions deemed to be useful to the progress of Science *in accordance with Article I. of the resolutions adopted at the Conference of London, October* 1918.

It is the incorporation of Article I. that determines the present character and policy of the International Research Council and the Unions formed under its auspices.

A list is given of the countries "that may participate in the formation of the International Research Council and of any Scientific Union connected with it, or join such Union at a subsequent period." It corresponds to the countries and dominions which were at war with the Central Powers, except that it includes Greece and Poland, and omits Russia and the new Baltic Powers. It then provides that, after a Union or Association is formed, "nations not included in the above list, but *fulfilling the conditions of Article I. of the resolutions adopted at the Conference of London*, and diplomatic Protectorates of the enumerated countries may be admitted either at their own request or on the proposal of one of the countries already belonging to the Union. . . . A favourable majority of not less than three-quarters of the countries already forming part of the Union shall be required for admission. . . . The statutes of the Unions formed by the International Research Council require the approval of this Council." Later, Czechoslovakia and a number of neutral countries, including Denmark, Norway, Holland, Sweden, and Switzerland, were invited to join the International Research Council and the scientific organisations attached to it.

As we have seen, the provision for the admittance of new countries refers only to the Unions, not to the Council itself, but it has in practice been assumed to apply to the Council. In an amendment to the constitution proposed by the Executive Committee this has been explicitly provided.

The meetings of the General Assembly are held, as a rule, once in three years. The last meeting was held in 1922, and the next will be on July 7 in the present year. At the meeting in 1922 it was resolved "that only countries which have adhered to the International Research Council are entitled to be members of the Unions connected with it."

The stringency of the exclusion of the men of science of former enemy countries is consistently maintained in the statutes of the Unions formed under the International Research Council. A rule, which is, it is believed, common to them all, provides that "the President of the Executive Committee [of the Union] may invite to a meeting of the General Assembly [of the Union] scientific men who are not delegates, *provided that they are subjects of one of the adhering countries*." It is at the General Assembly of a Union that scientific questions are considered, but no man of science, however eminent, is allowed to join in the discussion, or even to be present, if he belongs to one of the nations with which the Allies were formerly at war,—and this after seven years of peace.

From the first there were many scientific men among the allied nations who objected to these stringent measures of exclusion, and as time passed their numbers have increased. Geology has not only refused to form a Union under the International Research Council, but, at the Congress in Brussels in 1922, adopted an independent constitution, without any provision for excluding subjects of the Central Powers; and a meeting will be held under it in Madrid in 1926. The International Mathematical Congress that was to have been held in the United States in 1924 was abandoned because in that country "neither scientific co-operation nor financial support were in sight for a congress under the rules of the International Research Council." A meeting was, however, held in Canada, when the American Section of the Union passed a resolution requesting the International Research Council to consider whether the time was not ripe for the removal of the restrictions on membership now imposed by the rules of the Council. The London Mathematical Society has

refrained from attending this meeting, as well as that preceding it at Strasbourg.[1]

In view of the forthcoming meeting of the International Research Council, the Australian National Research Council has asked that this question shall be reconsidered. The Royal Academies of Science of Holland, Denmark, and Sweden, and the Société Helvétique have definitely purposed to amend the statutes by omitting all references to Article I. of the Resolutions of the Conference of October 1918. This change would, it is presumed, permit any nation to be admitted to the International Research Council and the scientific organisation attached to it on a vote of a majority of not less than three-quarters of the countries already included. Switzerland, however, would, by an additional provision, confine the privilege to countries forming part of the League of Nations.

Holland and Denmark wish, on the other hand, to rescind the provisions of the addition to the statutes in 1922, and thus permit a country to be admitted to a Union without previous admission to the Council. The Executive Committee will not support this proposal, but suggests an amendment, providing that a country which has joined the International Research Council has the right to be admitted to the Unions connected with it.

It is to be hoped that the International Research Council will not maintain the present exclusion of subjects of the former enemy powers; for we believe that this position is opposed to the wishes of the vast majority of the scientific men of the allied countries, and, needless to say, to the unanimous convictions of those of neutral lands.

If the Swiss amendments are carried, no distinction will remain between allies, enemies, or neutrals. The only condition of admittance will be membership of the League of Nations and the vote of the Council. This would permit of the admission of Austria at once. Germany would probably be eligible in a few months, but would have to wait for actual admission until the next General Assembly three years hence, unless of course she could be admitted conditionally on her joining the League of Nations. Russia would presumably be excluded, as she is not likely to join the League.

The simplest course would undoubtedly be to leave the question of admission to the uncontrolled discretion of the International Council, retaining, if it is thought desirable, the necessity of a three-quarters majority for a favourable decision. We are hopeful that the General Assembly at Brussels next week will alter a situation which is both unsatisfactory and unreasonable.

[1] Reference may also be made to the letter on this subject by Prof. G. H. Hardy, president of the National Union of Scientific Workers, published in some leading daily newspapers on May 30, 1924.

College Courses and University Examinations.

A BOLD policy has been adopted by the Senate of the University of London with the view of solving one of the oldest and most difficult questions in relation to the organisation of University education in London—the question of establishing a close association between college courses of study and the examinations for university degrees. The college selected for this experiment is the Imperial College at South Kensington, comprising the Royal College of Science, the Royal School of Mines, and the City and Guilds (Engineering) College. Of these Colleges, the Royal College of Science has always adopted a distinctive method of training its students, based on the intensive study of one subject at a time. The impracticability of completely adjusting the degree examinations of the University to this system of training, conjoined with a general desire on the part of the College for freedom in framing curricula, led to a prolonged and somewhat embittered controversy between the College and the University, in the course of which the College authorities adopted the extreme measure of applying for the status of a separate University. This failed, as other attempts of the kind had previously failed; but the fundamental problem remained unsolved.

The history of the controversy as to relating University examinations to college teaching is as old as the University itself. Established by Royal Charter in 1836 for the purpose of examining for academic degrees students of University College, King's College, and other affiliated colleges, the University in course of time adopted an attitude of aloofness to all colleges, though it was no part of the original conception of the University of London, as the Selborne Commission pointed out, that it should be a mere examining body, without any direct connexion with teaching institutions. In those early days great importance was attached to the independence of the examining authority. University College welcomed the Royal Charter for the University, on the ground that the professors of the College would not have to confer degrees on their own students. There were, however, some connected with the College who raised the objection that the examinations would interfere with the independence of College teaching, both by determining the course of study and by affecting the method of instruction; and the College manifesto admitted that "this argument has weight." It is a tribute to the fairness and efficiency of the University examinations that this objection was not pressed for so many years. In 1884 the "Association for Promoting a Teaching University for London" was formed. This was the