but it has always been found stronger than that. This variability is of interest as showing that there are differences in the properties of the two isotopes, and of course the effect of mass differences should be specially evident, on account of the large mass ratio 6 to 7, in the case of lithium.

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A REMEDY FOR MANGE IN WHITE RATS

A simple method of keeping white rats for experimental work free from mange has been successfully used for some time in this laboratory. Sore ears, noses and tails are quite common in rat colonies and are not caused by deficient rations, as is often thought, but by a parasite known as the *Notoedres alenis*.[1]

The lesions on the ear, due to the mange produced by this parasite, are very characteristic, causing the whole ear to swell and become inflamed with the outer edge of the ear fringed with a cauliflower-like incrustation. On the tail the lesions resemble those on the ear, while on the nose they frequently take the form of horn-like protuberances. These lesions can be readily differentiated from other lesions by the application of insecticides. We have found that pine oil[2] applied with a soft brush will heal affected parts very quickly. This oil has not only very healing properties, but also strong antiseptic and anesthetic properties. Because of the latter care must be exercised in its application.

Since learning of the effectiveness of this oil it is the custom in this laboratory to wash our animal cages once a week with hot water and soap and to spray the sawdust used on the floor of the cages with the oil. In this way all lice and parasites which are ordinarily troublesome pests in animal colonies are kept down to minimum. If an individual rat becomes infested with lice it can be sprayed with the oil. An atomizer is used for this purpose.

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[1] Private communication of Dr. B. H. Ransom, Bureau of Animal Industry, to Dr. J. E. Foster, formerly with the Mayo Clinic.

[2] The pine oil used for the experiments was furnished by the Newport Company of Pensacola, Fla., through the courtesy of R. C. Palmer, chief chemist.

IMPOSSIBLE (?) STORIES

Dr. Campbell's astonishment at the actual occurrence of the Mark Twain incident (March 4) "reminds me." I had looked upon the Irishman's astronomy as related by DeMorgan[1] as a good "manufactured" story.

Long life to the moon for a dear noble cratur
Which serves for lamplight all night in the dark,
While the sun only shines in the day which by natur
Wants no light at all as ye all may remark.

I was astonished to hear Dr. W. C. Farabee, of the University Museum, relate that in his South American expedition he found the Shipibos Indians worshipping the moon and that upon inquiry they gave the same reason as the Irishman.

Samuel G. Barton
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[1] "Budget of Paradoxes," p. 242, 2d ed.

QUOTATIONS

INTERNATIONAL SCIENTIFIC ORGANIZATION

There is much to be said in favor of "teamwork," the concentration of many experts on a single problem or on one aspect of a problem. Some inquiries are so vast in scale that progress on any other lines can not be expected.

The modern telescope has made known the existence of myriads of stars beyond those visible to the unassisted eye. The counting and classification of this multitude can be achieved only by the concerted patience of many men in many countries, and may yet form the basis of some new conception of the order of the universe. Meteorology and geodesy, the attempt to plot the shape of our earth from a number of long base lines, must be international. The determination of standards is of little use unless it lead to universally agreed methods and results. The development and control of fisheries, the ap-

pointment of close times, and the protection of breeding areas require cooperation.

Many minor problems, such as the study of variations in human anatomy, can be advanced most quickly if all the opportunities in different countries are employed simultaneously on a selected object. Such examples could be multiplied indefinitely. International team-work is required sometimes merely as the quickest means of attaining the object, sometimes because no other method is possible, sometimes because common practical interests are involved.

Before the war international scientific cooperation was obtained in several ways. As many as 40 to 50 international bodies had come into existence in response to the need. Some were sustained by formal conventions arrived at through the usual diplomatic channels; others were due to the efforts of individual scientific societies or interests; many were the informal result of personal effort directed to a common purpose. All these were rudely interrupted by the clash of arms, and much water will have to pass under the bridges before the healing process has been completed. But it has already begun.

Through the booksellers work published during the war is creeping across the frontiers; the impersonal exchange of publications has been resumed between many of the learned societies; there has even been a little furtive correspondence between individuals. Science could not wait. The theory of Einstein, the German Jew, was put to the test by British astronomers; physiologists and doctors here and in Germany had to use the same methods of research in struggling against the same problems of altered nutrition and of damaged men, and could not let their service of humanity be restricted by a local patriotism. Had it been allowed to take its natural course, this cold, almost stealthy redintegration would have offended no one and would, indeed, have assisted towards the open internationalism which we must all hope for our sons or sons' sons, although we can not even wish it for ourselves.

But there were the formal conventions. On these descended a little group of diplomatists of science, almost as aloof from the real feelings of those whom they claimed to represent as the big men of the Peace Conferences. They held a conference in London in October, 1918, when every one except themselves knew that the war was almost over. They resolved, good people, that it "was desirable that the nations at war with the Central Powers should 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 should permit," and that "new associations, deemed to be useful to the progress of science and its applications, be established without delay by the nations at war with the Central Powers with the eventual cooperation of neutral nations."

Then came the armistice and then, after an interval so long that impersonal relations with our former enemies had begun to be resumed, came the Peace Treaty. By that the Germans undertook to withdraw from most of the scientific conventions. Nevertheless, so far as the Allies and neutrals were concerned, these remained in existence. The same group of amateur diplomatists called a conference at Brussels larger in numbers but equally unrepresentative in character. This conference proceeded to destroy the last remnants of existing international cooperation. First they withdrew themselves from all the conventions; next they excluded all the Central Powers; thirdly they excluded all the neutrals. Having thus created chaos, they proceeded to the elaboration of a scheme of superorganization almost pathetic in its sterile incompetence.

The basis of the wonderful edifice is an International Research Council. This is to be the supreme body in all the affairs of science, to coordinate international efforts, to initiate new international unions, to direct international activity and to negotiate with governments. Its constitution is to remain in force for ten years and all subordinate

unions or associations are to comply with its statutes. Of these the vital clause is that membership is to be limited at first to what were the Allied countries during the war but that countries then neutral may be admitted if they obtain a favorable majority of not less than three-quarters of the countries already in the Union. It appears to be the case that former enemy countries if they choose to plead for admission and can obtain a three-quarters majority are also eligible, but there is dispute as to the interpretation of the phrases. In any event the scheme perpetuates for ten years the division of the nations into the groups of war with the addition that former neutrals are asked to desert their neutrality and join the Allied scientific combine.

The legal domicile of the new supreme body is to be at Brussels where the funds are to be kept, and triennial general assemblies are to be held. An executive committee consisting of five members (a "big five") is to direct the affairs of the Research Council between the meetings of the Assembly. All the branches of science are invited to form international unions with their statutes in agreement with those of the Research Council.

The organization is actually in existence and several of the subordinate international unions have been formed. But how far these have any real significance or vitality it is more difficult to say. The statutes laid down that a country could join the International Research Council or any Union connected with it through its principal academy, its national research council, some other national institution or association of institutions, or through its government.

It is therefore clearly within the power of bodies without a direct mandate from scientific men as a whole to make their countries formal participants. British biologists, for example, have formally refused to join an International Biological Union on the double ground that the complex organization will hinder rather than help cooperation, and that the constitution perpetuates international divisions which should be left to time to heal. But the promotors of the scheme are making efforts to create a "National Council" which could then enter the new edifice by a back door. No clear statement has been published as to the action of other countries, but evidence accumulates as to the absence of real support for the scheme of super-organization.—*The London Times.*

The issue of the *Times* published on March 8 contains an article headed "The Progress of Science; Revolt against Super-Organization." A few words of comment are necessary, though the task is disagreeable owing to the general tenor of the article, which in parts is frankly abusive and in others misleading. Its chief invective is directed against the International Research Council. This, according to the author, is to be "the supreme body in all the affairs of science," and he follows up this product of his imagination by enumerating in the same sentence the avowed objects of the International Research Council, placing a pure invention of his own in juxtaposition to the actual functions of the body concerned so as to leave the impression that both have equal authority.

The International Research Council was founded in the first instance through the action of the Royal Society and the Academies of Paris, Italy, Brussels and Washington. Its object was to reorganize international work which had come to a standstill through the war, and to extend it where found desirable. The question as to the time at which former enemy countries should be admitted is a matter for argument, and it may be the policy of the *Times* to urge their immediate inclusion in the interests of the general peace of the world. Recent incidents at a meeting in Paris at which a German professor took part do not confirm this view, but the question has had nothing to do with the purpose which the writer pretends to discuss. It should not be forgotten, however, that a friendly personal intercourse is an essential condition of the success of international conferences. This is recognized by the countries neutral during the war, which have nearly

all accepted the invitation of the International Research Council to take part in this common enterprise.

The International Research Council has initiated the formation of unions for the conduct of scientific work. In the subjects of astronomy, geodesy and geophysics, and chemistry such unions are actually at work, and two others have been formed. Once an international union is established it becomes autonomous, and conducts its work without interference from the International Research Council except in a few matters in which a common policy is desirable.

Every one knows that the decisions of an international conference are only advisory, and have no binding force on the separate countries. Representatives taking part in the conference report to the home authorities concerned, who act as they think fit, accepting, no doubt, in general such recommendations as have secured practical unanimity. At a recent meeting in Brussels certain countries desired to initiate the formation of an International Union of Biology, and their representatives tentatively drew up some statutes. These were submitted to a competent body in this country, which reported unfavorably, and there the matter ends so far as Great Britain is concerned. This does not, of course, prevent France, Italy, the United States, and other countries from forming a Union of Biology if they wish. I fail to understand where the grievance of the *Times* comes in.—Arthur Schuster, General Secretary of the International Research Council, in *Nature*.

SCIENTIFIC BOOKS

THE TERRESTRIAL LIFE ASSOCIATED WITH THE COALS OF NORTHERN FRANCE

IN a large, very detailed, and well-illustrated memoir published by the French Ministry of Public Works,[1] Dr. Pierre Pruvost of the University of Lille Museum, has given us the most extensive work so far published on the fresh-water and land invertebrates of the Coal Measures of northern France, that is, of the Westphalian, the equivalent of our Pottsville and Allegheny series. The memoir is based on the "documents preserved in the museum of the University of Lille . . . which never could have been brought together without the cooperation of the mining engineers and the scientific men who are exploiting the basin of the north," and its object is so to define the faunal zones as to give to these same mining men fixed points from which they can reckon the stratigraphic position of their coals.

From the 17 species heretofore known in the fauna, the number is now increased to 116, 54 of which are new. They represent the following classes: 13 bivalves, 1 tubiculous annelid, 6 ostracods, 5 phyllopods (3 new), 3 Malacostraca, 2 Syncarida, 53 specifically determined insects (43 new), 1 eurypterid, 3 limulids, 7 spiders (3 new), 4 sharks, 6 crossopterygians (2 new), and 12 ganoids (3 new). These forms are found in 6,970 feet of Westphalian strata, divided into 5 formations and 9 members, most of which are of fresh-water origin, since it is only in the lower 2,350 feet that there is occasional evidence of the sea, this being most decided near the base.

The common fossils with limited ranges and therefore of value in correlating the various horizons are shown to be (1) the bivalves (*Carbonicola, Anthracomya, Naiadites*), (2) the phyllopods (*Estheria, Leaia*), and (3) the scales and teeth of fishes. The ostracods *Carbonia* and *Cypridina* and the annelid *Spirorbis* are all long-ranging, while the insects, even though they are of very short range—in fact, but very few forms extend through more than one zone—occur too rarely to be useful in detailed stratigraphy, other than of a local basin. It is interesting to note that the fresh-water life has in its time duration about the same zoning value as the plants, and that both classes of organic evidence lead to the making of the same general time divisions. With these results attained, the author then paral-

[1] "Introduction à l'Étude du Terrain Houiller du Nord et du Pas-de-Calais. La Faune Continentale du Terrain Houiller du Nord de la France. Mémoires pour servir à l'explication de la carte géologique détaillée de la France," pp. 584 (quarto), 29 pls., 51 text figs., Paris, 1919.