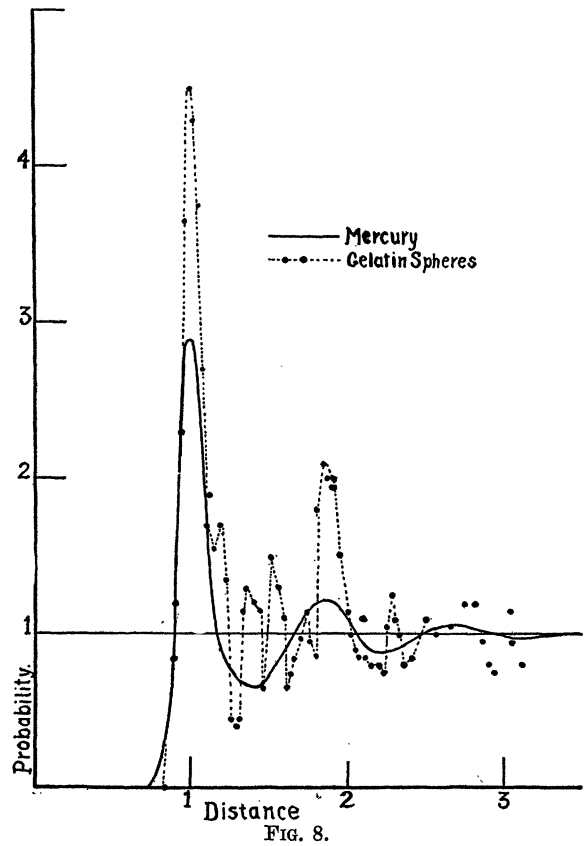

FIG. 8.

several sub-maxima appear. If the gelatin balls were more agitated and expanded, their curve would undoubtedly approach very closely to that for mercury.

Our plan is, next, to study the arrangement of balls of two sizes and different relative numbers together, corresponding to solutions of molecules of different volumes. This should permit a more rigid handling of our fundamental equations than is now possible, and make the calculation of solubilities an easy matter.

We are also studying molecules which are not spherical but shaped like sausages, and we have certain solubility data all ready to test our observations.

We are also making a comprehensive study of non-polar, highly symmetrical molecules, in pure liquid form and in their mixtures, which differ widely from each other in size and in intermolecular forces, and hence furnish crucial tests of various theories of solution.

This ends my exposition of the liquid state. I have tried to show that it represents a range in which the kinetic energy of the molecules is sufficient, on the one hand, to overcome the orienting forces which bind them into a rigid lattice, but is insufficient, on the other hand, to allow them to escape each others' attractions and fly apart into the gaseous state.

I have tried to show the existence of polar, orienting forces between molecules, also of non-polar forces, and how both of these depend upon the nature of the constituent atoms as well as upon their geometrical arrangement.

I have discussed the wide variations in strength of both types. We have considered the behavior of pure liquids made up of polar molecules and again of non-polar molecules. We have seen that light can be thrown upon the subject by the study of mixtures of molecules of the same and of different types, and that the important and complicated problem of solubility is susceptible to qualitative and, in the case of non-polar systems, to quantitative treatment.

I have tried to show, finally, that much still remains to be done, and that it constitutes an inviting field for research; not a spectacular one, for it corresponds, not to the discovery of large nuggets of gold, but rather to the working of large volumes of lower grade ore that has been passed over by the "forty niner" as not yielding immediate profits. It is good fun, nevertheless, if you are made so that you enjoy that sort of thing.

I will now show you, in conclusion, a beautiful experiment that illustrates the possibility of a substance remaining in the disordered array of the liquid state under conditions where it is ordinarily solid, simply because no organizer has appeared to start the formation of the regular ranks of the solid form. We see here what is known as a supersaturated liquid solution. On addition of a speck of crystal, as a nucleus for growth, large masses of solid rapidly separate.

A student once defined such a supersaturated solution as "one which contains more than it can hold." I hope that this, my lecture, does not leave you in a similar condition.

SCIENTIFIC EVENTS

THE INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS[1]

THE International Council of Scientific Unions (formerly the International Research Council) held its first triennial meeting, since its new statutes were adopted, on July 8–13 at Brussels. The general assembly of delegates met at the Palais des Académies, Brussels, and elected Dr. N. E. Nörlund, director of the Geodetic Institute and rector of the University of Copenhagen, president for the period 1934–37; General J. F. Bourgeois, of the Academy of Sciences,

[1] *Nature.*

Paris, and Marchese Marconi, president of the National Research Council of Italy, were elected vice-presidents. Dr. Pelseneer and Dr. Went remain members of the executive committee and Sir Henry Lyons the general secretary.

At this meeting for the first time, the International Unions of Astronomy, Geodesy and Geophysics, Chemistry, Scientific Radio, Physics, Geography and the Biological Sciences attended as members of the council, and communicated accounts of their activities in their respective scientific fields of work during the past three years.

For the first time also, addresses were given on scientific matters of general interest, and these included, on this occasion, one by Dr. D. la Cour on the International Polar Year, 1932–33, its aims, methods and some preliminary results; another by General G. Perrier, on recent international determinations of longitude; while Dr. E. P. Hubble spoke on the exploration of space, and Professor H. R. Kruyt on electricity and hydration with colloids.

The International Committee on the Relationship between Solar and Terrestrial Phenomena was reappointed, and another on instruments and methods met to arrange its future procedure.

The following motion, put forward by the Royal Academy of Sciences, Amsterdam, was unanimously adopted by the General Assembly:

The International Council of Scientific Unions, being aware of the fact that the present economic and political difficulties have brought humanity face to face with a number of the most complicated and dangerous problems and threaten to erect a system of barriers between various nations, expresses its deep faith that ultimately a way will be found leading towards a more harmonious economic structure, and wishes to stress the importance of maintaining by all means international cooperation in the domain of science under whatever circumstances may present themselves.

As laid down in its statutes, the council recognizes the relations between pure and applied science. There is no doubt that both governments and industrial groups will in an ever increasing degree call upon scientists for elucidation of the manifold complexities and problems which human life and human relationship are presenting —problems, the most important of which perhaps are those of finding food, space in which to live and employment for the various peoples spread over the earth. If at the present moment an international organization devoted to the solutions of these problems is still beyond our vision, and organization constructed according to national systems must provisionally be strengthened for fear of losing hold of economic possibilities, it can be foreseen that the scientists of every country will be drawn more and more into these spheres of national organization. The council expresses its confidence that scientists, while giving their aid in meeting the needs of their own nations, will never lose sight of the international character of science as a whole, and will ever continue to keep in working order and to develop the connections necessary for international cooperation, even if severe shocks unhappily might come to threaten economic and political relations.

In professing its faith in the possibility and the necessity of peace between the world's peoples, the council points out that the "brotherhood of scientists" can be an important factor towards the establishment of a desire for mutual understanding and helpfulness in order to overcome the dangers involved in a too exclusive nationalism.

The council, therefore, in emphasizing the significance of science, both pure and applied, as a common treasure for all humanity, which can only be realized through a free-spirited cooperation of the most diverse elements, is of opinion that scientists of the whole world have a task of working for this understanding, and urges all allied organizations to give constant attention to this task.

The General Assembly accepted unanimously an invitation from the Royal Society to meet in London in 1937.

THE PROTECTION OF SCIENTIFIC PROPERTY

AT the annual meeting of the American Bar Association, which will be held at Milwaukee, from August 27 to 29, the report of the section of patent, trademark and copyright law will be presented. The question of the protection of scientific property had been referred to a subcommittee consisting of Messrs. Robertson, Haynes and Willits, and the following report of the subcommittee was adopted and is submitted as the report of the Committee on Patent Law Revision:

At the meeting of the Section of Patent, Trade-Mark and Copyright Law held at Grand Rapids in August, 1933, Mr. Richard Spencer (now First Assistant Commissioner of Patents) for the Committee on Scientific Property, reported as follows: "The committee commenced the investigation of this topic several years back and has from time to time reported its findings (*American Bar Association Journal*, January, 1932). At present it is cooperating with various scientific groups to learn whether the scientists themselves want protection. Rather extensive reports so far gathered indicate they do not. The subject, however, is not yet exhausted and it is accordingly recommended the subject be carried on the agenda another year."

In January, 1934, the Council of the American Association for the Advancement of Science published an extensive bulletin entitled "Protection by Patents of Scientific Discoveries." This report (40 printed pages) was made by the American Association's committee consisting of Messrs. Joseph Rossman, F. G. Cottrell, A. W. Hull