PROBABILITY OF A MAGNETIC STORM DURING THE SOLAR ECLIPSE OF AUGUST 31, 1932

A NUMBER of investigators have planned radio measurements of one kind or another during the solar eclipse of August 31, 1932. Such measurements will be related to a certain extent to the magnetic character of the day. In fact the state of the ionized regions of the upper atmosphere bears about the same relation to these experiments as does the weather to those of the astronomers. It is desirable, therefore, to predict as well as possible the radio and magnetic character of the day.

On the basis of the 27 day recurrence tendency it is probable that the earth's field and radio transmission will be disturbed at least moderately and possibly severely, the maximum disturbance occurring a day or so before the eclipse. The date of the eclipse falls in a sequence of magnetic disturbances which have been active for at least three revolutions of the sun (approximately 27 day period). The latest storm of this sequence on August 1 or 2 has been of moderate intensity. A large sun-spot surrounded by bright hydrogen flocculi crossed the central meridian of the sun on August 2. On this basis a storm would be expected to begin on August 28 or 29 and might last until after the eclipse. Since the radio phenomena are different on days when magnetic storms occur from those on days without disturbance it is important that experiments to be carried out during the eclipse be planned with this possibility in mind.

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A PROPOSED WORKING ABSTRACT OF THE LITERATURE OF CHEMISTRY

WHENEVER a research is undertaken in chemistry, the first thing to be done is to find out what has been done in the past along the lines related to the research in hand. If the facts already discovered are known by the researcher, much time is saved in all research projects; in fact, it is foolish, at the present time, to undertake a piece of research work without first finding what has already been done along the line of the investigation and related lines.

This means that the investigator must have access to all the literature of chemistry, that he must devote a lot of time to searching through the literature to find what is there, and often it involves trips to other libraries and other parts of the country, or even to other countries, if the work is to be done in a thorough manner. Many times this requires weeks or months of time, and quite often it is true that some very essential things are overlooked in these searches as they are so often undertaken by those who are inefficient or inexperienced in such things.

This preliminary investigation would be far better if it could be carried out by one or several familiar with such work. At present the ordinary method is for each one attempting a piece of research work to make his own investigation of what has been done along the lines of the project in hand. But few of those who have been trying investigations know how to do this with accuracy and completeness. A beginner at research or one with small experience is sure to do it in an inefficient way at first.

It is proposed to prepare a working abstract or set of abstracts of all chemical literature. This is not to be an abstract in the ordinary sense which often only gives what articles are about and the conclusions reached. It is proposed to put the essential facts of all chemical literature on a set of cards, these cards to give the actual working or reacting things as stated in the literature, so that the real chemistry involved may appear and may be understood and used without having to go to the original articles which are scattered through the literature. It is proposed to put these facts on cards and arrange these cards as any other card index is arranged, with cross references, etc. Whenever chemical reactions are involved, these are to be given on the cards so that one would have the actual data for the re-performance of the experiments. It is proposed that this index cover the whole range of the literature of chemistry so that any one starting an investigation would have at hand all the known facts in regard to the subject under consideration. As soon as all the literature has been abstracted the complete story of chemical literature and chemical experimentation would be at this one place, although it may have been gathered from many libraries and from the literature of the world. Moreover, it will have been gathered by those who knew how to do this work and not by novices, and it is a complete story. There would be no restriction of the abstracts to journal articles, but institutional publications, special pamphlets and all other chemical literature would be included and used.

A complete abstract of the kind suggested would save hundreds of repetitions of library work, would be more complete than any new researcher could hope to make for himself on his subject, would give more material than any one library in the world could otherwise furnish and would be at hand for immediate use. One can not even make an estimate of how much this would speed up research in chemistry, but surely it would not only save time but would give the man starting a research the complete story of what has been done and give it to him at one place and prepared by those skilled in doing such work. It would also be a great incentive to new work and

new investigations, since many an investigation is not entered into because of the difficulty of learning fully what has been done. One fears to devote time and energy to something which may have been already tried out in another place or another country. The time saved by this proposed system of abstracting will permit many a good investigator to take up problems for which he does not have time under the present system. What a boon it would be to industrial chemistry!

It will take time and money to carry out this proposed plan, but it will be a mine when it is in shape—a mine furnishing real precious products. After the chemical literature of the past has been once abstracted it will not require so much expense to keep the material up to date.

The great universities of the country might combine in their efforts and carry out such a project. Many sets of the cards could be printed without great additional expense, and thus the complete work would be given to each of the institutions. In this way the expense would not be so great for each institution. Large industrial organizations might join with the institutions or they might get together and carry out the plan themselves. It would grow into a very large card system and would require space for installation and care. As the years go by, it would continue to grow and occupy more space.

Another method of carrying out such a project would be the formation of an independent organization for the purpose which would be endowed and completely fitted for carrying on the work. This organization could print numerous copies of all cards made and furnish them to educational institutions or industrial organizations wanting them—either a complete set or those on given subjects as desired. This would call for a liberal endowment.

Other methods of carrying out the plan are possible, of course, and even better ones might be found. There is no question but that the idea is a great one and the carrying out of such a plan would involve excellent planning and a considerable outlay of money. It would be one of the greatest scientific achievements of the century.

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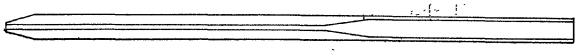
SCIENTIFIC APPARATUS AND LABORATORY METHODS

A PIPETTE FOR THE DILUTION COUNTING OF HOOKWORM EGGS[1]

THE pipette shown in the accompanying figure has, in this laboratory, proved more satisfactory than any



other suggested for use in the dilution counting of hookworm and other parasite eggs in human feces, by Stoll's method.[2] It consists of a 12 cm length of capillary glass tubing, with inside diameter between 1.0 and 1.1 mm and outside diameter approximately 7 mm, fused at one end to a piece of ordinary glass tubing, with outside diameter of 7 to 8 mm, to make a total length of 20 cm. The taper inside the junction should be perfectly smooth and even and approximately 1.5 cm in length. The end of the capillary tubing is ground on a carborundum stone or wheel and finished on a fine stone to produce a smooth, strong tip.

When one is calibrated, all others from the same stock can be estimated quite closely, thus shortening the labor of calibration. In this laboratory it has been found that technicians are most accurate in calibrating if they are instructed to vary the marking of the pipette until 20 times will fill, level full, a serum tube which has been cut off to hold exactly 1.5 ml. Final checking is then done by the person in charge, and recorded on the pipette with a diamond pencil. The resulting column of fluid will contain the required .075 ml and will vary in length from 65 to 95 mm, within which limits reading is quite accurate.

This pipette eliminates the difficulty of contamination of successive specimens by the accidental filling of the rubber bulb, a frequent occurrence in similar capillary pipettes which do not have the larger tubing attached. Furthermore, this pipette has not the fragility of those drawn from larger tubing, nor the tendency to clog found when the latter are drawn to a taper.

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[1] The studies and observations on which this paper is based were conducted under the auspices of the Department of Public Health of the Egyptian Government and the International Health Division of the Rockefeller Foundation.

[2] N. R. Stoll and W. C. Hausheer, "Two Options in Dilution Egg Counting: Small Drop and Displacement," *Amer. Jour. Hygiene*, 6: 134–145, March Supplement, 1926.

MERCURY VAPOR PUMPS FOR VACUUM DISTILLATIONS[1]

THE vacuum pumps used in organic laboratories to evacuate distilling apparatus are ordinarily of the

[1] Contributed from the Chemical Laboratory of the University of North Carolina.