ment of Terrestrial Magnetism of the Carnegie Institution of Washington, and by various cooperating magnetic observatories, institutions and individuals. One magnetic observatory, that at Agincourt, near Toronto, Canada, lies within the shadow belt. The Coast and Geodetic Survey magnetic observatory at Cheltenham, Maryland, is also very favorably situated, being within 200 miles of the southern edge of the path. The observatories of Great Britain lie near the path, although the sun will set while still eclipsed at those stations.

The general scheme of work is as follows:

1. *Simultaneous magnetic observations* of any or all the elements, according to the instruments at the observer's disposal, every minute from January 24, 1925, 11^h 58^m to 18^h 02^m Greenwich civil mean time.

(To insure the highest degree of accuracy, the observer should begin work early enough to have everything in complete readiness in proper time. *Past experience has shown it to be essential that the same observer make the readings throughout the entire interval.* If possible, similar observations for the same interval of time as on January 24 should be made on January 23 and 25.)

2. At *magnetic observatories* all necessary precautions should be taken to insure that the self-recording instruments will be in good operation not only during the proposed interval, but also for some time before and after, and eye-readings should be taken in addition wherever it is possible and convenient. (*It is recommended that, in general, the magnetograph be run on the usual speed throughout the interval, and that, if a change in recording speed be made, every precaution possible be taken to guard against instrumental changes likely to affect the continuity of the base-line.*)

3. *Atmospheric-electric observations* are desirable to the fullest extent possible with the available equipment and personnel. Observations of potential gradient are most easily provided for and most conveniently taken; in addition to these, observations (preferably for both signs) of either conductivity or ionic content are also very desirable. Full notes regarding cloud and wind conditions and, if possible, observations for both temperature and relative humidity should accompany the atmospheric-electric observations. These observations should cover the same interval as the magnetic observations. The value of the observations on the day of the eclipse will be greatly increased if similar observations can be made during the same time of day on two or three days before and after the eclipse.

4. *Meteorological observations* in accordance with the observer's equipment should be made at convenient periods (as short as possible) through the interval. It is suggested that, at least, temperature be read every fifth minute (directly after the magnetic reading for that minute).

5. *Observers in the belt of totality* are requested to take the magnetic reading every 30 seconds during the interval, 10 minutes before to 10 minutes after the time of totality, and to read temperature also every 30 seconds, between the magnetic readings.

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A METHOD OF MAKING PERMANENT SMEARS OF POLLEN MOTHER CELLS

IN some recent work on *Ginkgo biloba* excellently fixed preparations of pollen mother cells in mitosis were obtained by the rapid and simple method outlined below. The desired stage of the anthers was determined by Belling's aceto-carmine method (Belling, J. (1921) *American Naturalist* 55: 573–4). A very thin film of albumin fixative was spread on a slide; then the anther was crushed and its contents distributed upon the slide with a scalpel as evenly as possible. When this was done, the slide was placed in a Coplin jar containing Flemming's medium fixative for 24 hours, washed 5 hours in running water, bleached in hydrogen peroxide and dehydrated and stained with safranin and light green. This method seems worth testing on other plants, since with it permanent records can be kept of material which has been studied by Belling's method. Such records are exceedingly useful for demonstration purposes, since even if the desired plants are in good condition, which can not always be the case, considerable time is consumed in making new preparations for each visiting scientist who wishes to see the actual material described in some published work.

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OSMOSIS DEMONSTRATION FOR CLASSES IN BIOLOGY

IN the article, "Osmosis demonstration for biology classes," by Mr. Benjamin C. Gruenberg (SCIENCE, LX, 1555, October 17, 1924), there is described a very excellent method for preparing celloidin bags for this demonstration. There is just one addition to this method, which our technician has found a big assistance.

This is in the preparation of the bottles before the "new skin" or celloidin is poured into the bottles. This consists of covering the inside of the bottle with a ten per cent. solution of molasses and water. The molasses solution film is allowed to thoroughly dry on the inside of the bottle, before coating the inside of the bottle with the celloidin film. The celloidin film can very easily be removed by simply immersing the bottle in water as this will dissolve the film molasses coating on the bottle.

The only precaution necessary is to be sure that the ether of the celloidin solution has been thoroughly removed before the water is added. As pointed out, the ether will have sufficiently evaporated when the odor of ether is gone.

Our technician has found this a great time-saver; it also eliminates the danger of breaking the bag in removing it from the bottle.

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HEARING IN A NOISE

REFERRING to the letter of Dr. G. W. Boot, in SCIENCE of October 17, it seems that many cases of enhanced acuity of hearing of deaf people in the presence of a noise, including one of the cases cited by him, are really cases of greater ease of conversation with a normal hearing person. These may be explained by the fact that the noise bothers the deaf person less than the normal person, due partly to the difference in the levels of loudness to which they are sensitive and partly to the difference in frequency between the noise and the speech, the deaf person being more deficient for the noise frequencies than for the speech frequencies. As Dr. Boot points out, it is people with fixation of the stapes who report the phenomenon, and these people are deaf at the lower frequencies, which is the region of probably most disturbing noises.

I would like to call attention to the desirability of having the test made which was suggested in the March issue of the *Annals of Otology, Rhinology and Laryngology*. If the hearing itself is improved in the presence of a noise, as Dr. Boot maintains, then two such people with similar deficiencies in hearing should be better able to converse *with each other* in noisy surroundings, while if the change usually noted by them is due to the change in loudness with which normal hearing people talk in a noisy place, as is suggested above, then the two deaf people should not find the noise to be of any benefit. It is hoped that some one with clinical material available may try this experiment.

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SPECIAL ARTICLES

INFLUENCE OF ULTRA-VIOLET LIGHT ON YOUNG LAYING HENS

WE have found ultra-violet light to have as much effect on the egg production in young laying hens as it has on the bone development in young growing chicks. It is very common for young laying hens, when kept in the absence of ultra-violet light, and on a feed low in the anti-rachitic vitamin, the condition that tends to produce rickets (leg weakness) in growing chicks, to develop a pathological condition characterized by the following symptoms:

(1) The egg production is low.

(2) The eggs produced have very thin shells.

(3) The whites and yolks have less calcium and phosphorus than normal eggs.

(4) A much smaller percentage of these eggs hatch than normal eggs.

(5) Fully developed eggs are often retained in the oviduct, for three or four days.

(6) The hens often develop lameness or paralysis of the legs or wings.

(7) The bones become low in their mineral content and are easily broken.

(8) The calcium and phosphorus content of the blood is below normal.

That ultra-violet light will prevent the above condition is shown by the following experiment which we conducted last winter.

Two lots, of twelve Leghorn pullets each, were placed in the nutrition laboratory October 1, 1923. They were given the same ration, which consisted of yellow corn 82 per cent., tankage 5 per cent., casein 5 per cent., butter fat 5 per cent., bone ash 3 per cent., all ground together in a mash, and all the sprouted oats and oyster shells they would eat.

A cockerel was placed in each pen the first of January. Once a week these cockerels were shifted from one pen to the other in order to reduce, as much as possible, the influence of the male on the hatchability of the eggs from the different pens.

Beginning January 23 the hens in Pen I received a ten-minute ultra-violet light treatment each day during a period of sixteen weeks. During the period before the light treatment of Pen I was begun, there was no significant difference in the egg production of the two pens. The light treatment had a very marked effect on the egg production which showed up during the first week it was used.

During the sixteen-week period, in which Pen I received the ultra-violet light, the hens laid 497 eggs, while those in Pen II laid only 124 eggs. The eggs in Pen I had about 30 per cent. more calcium in the shell, and 5 per cent. more in the contents (whites and yolks) than the eggs in Pen II. Eggs from Pen I had an average hatchability of 78 per cent.,