17.5 per cent. more culms per plant, weighed 48.5 per cent. more, and yielded 35.2 per cent. more grain and 51.3 per cent. more straw on the average than the larger parent. In all other characters the hybrids were intermediate between the parents. In the second cross the F_1 plants yielded 18.9 per cent. more grain, and the grain-straw ratio was increased 33.8 per cent. over that of the larger parent. In all other characters the F_1 plants of this cross were intermediate in size between the parents. In other crosses other characters manifested the influence of heterosis.

Heterosis is commonly accepted as having a genetic basis and as such this increase in plant size is satisfactorily explained as being due to the bringing together in the F_1 of the growth factors present in both parents. The impression seems quite generally held that when heterosis occurs in an F_1 hybrid individual the increased size is of a more or less general nature, extending to all or most all the measurable parts of the hybrid organism. In the light of available knowledge it appears that this widely held conception may need some revision. Barring actual linkage, heterosis is a condition which more often has a rather high degree of specificity. In some crosses a number of the parts of the F_1 hybrid plant may show influence of heterosis, yet it does not necessarily follow that the parts are closely linked genetically. The fact that in some F_1 crosses only a single plant part shows the influence of heterosis, while in others there may be several showing increased size, definitely indicates lack of genetic linkage.

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THE PRODUCTION OF NUTRITIONAL ANEMIA IN WHITE RATS

I HAVE read with interest the artitcle entitled, "A Reliable Method for the Production of Nutritional Anemia in White Rats," by Robert S. Harris, which appears in SCIENCE for November 25. We have been feeding Klim to produce anemia in this laboratory for some time. At first[1] we reconstituted it by adding water, but for nearly two years now we have been feeding the dry powder, and have suggested it to a number of other laboratories.

Klim, being dried by a spray process, has less opportunity for metallic contamination than drum process milk powders. By purchasing in quantities of 500 pounds or more we have been able to standardize on the product of one plant, which runs quite uniform at 3 to 5 parts per million of iron and 1 to 2 parts per million of copper. This amount of copper corresponds very closely with that shown to be present in uncontaminated whole milk from different areas by Elvehjem and Steenbock and Hart.[2]

That Harris is able to produce a more pronounced anemia in a shorter time than we have reported[3] is probably due to a difference in method of handling prior to placing on the Klim diet. Elvehjem and Kemmerer[4] have shown that if young rats from the twelfth day, when their eyes open, do not have access to any supplemental food other than cow's milk, anemia develops very rapidly, whereas if allowed to partake of the usual solid breeding diet between the 12th and 21st (or 28th) day of age, development of anemia on a subsequent milk diet is much slower.

Harris' observation that there is an inverse relationship between rate of growth and hemoglobin is in agreement with the findings of other laboratories.

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MOSQUITOES KILL LIVE STOCK

REPORTS of the death of live stock and even of man as a result of mosquito attack are current, but apparently few of these have been verified. It seems desirable, therefore, to record a recent outbreak of *Psorophora columbiae* Dyar and Knab, in Florida, which resulted in the death of at least 173 head of live stock and poultry.

This outbreak came suddenly and with great fury on the night of September 5 and continued for several days. The losses were most severe the first night, many animals being found dead or nearly so the following morning. Mr. T. E. McNeel, of the Bureau of Entomology, who investigated the outbreak several days after it occurred, made a careful check on reported losses in the vicinity of Miami and verified reports of the death loss of 80 cattle, 67 hogs, 3 horses, 1 mule, 20 chickens and 2 dogs. Reports of losses at other points in the vicinity of the Everglades have been recorded, but have not been checked. Mr. C. D. Mathews, chief of the Bureau of Dairy Inspection of Miami, stated that the milk supply from the Hialeah district was reduced by about 1,000 gallons a day from September 6 to 10 and had not returned to normal on September 20.

The death of the animals was attributed by many to blood loss. The manager of the Miami Soap Company, who received most of the dead stock, stated to Mr. McNeel that when the heads of the animals were cut off there was no flow of blood as normally occurs.

[1] Levine, Remington and Culp, *Jour. of Nutrition*, 4: 469, 1931.

[2] *J. Biol. Chem.*, 83: 27, 1929.

[3] Levine, Culp and Anderson, *Jour. of Nutrition*, 5: 295, 1932; and Coulson, Levine and Remington, *Amer. Jour. Public Health*, 22: 1141, 1932.

[4] *Jour. Biol. Chem.*, 93: 189, 1931.

Dr. H. E. Miller performed post-mortem examinations on a number of the animals and stated that no mosquitoes were found in the air passages. While blood loss was no doubt an important factor, it is the writer's opinion that the death of the stock may have been due to the injection of a toxin by the mosquitoes as well as to the loss of blood.

In the case of the larger herds the cattle apparently protected themselves to some extent by bunching closely together, and those which had access to the canal stayed in the water up to their heads, and very little loss occurred in these herds. Smudges and applications of grease and oil were extensively used, and no doubt prevented greater death losses.

Psorophora columbiae is one of the smaller species of the genus. The eggs are laid on the soil and hatch quickly when submerged. Thus, great swarms of adults emerge almost simultaneously when egg-bearing areas are flooded. The species is usually of little importance as a pest of man. In this outbreak, however, it is reported that men who were making smudges and otherwise looking after stock had to wear heavy coats and blankets to protect themselves, and some of them stated that they were sick for several days from the bites of the mosquitoes.

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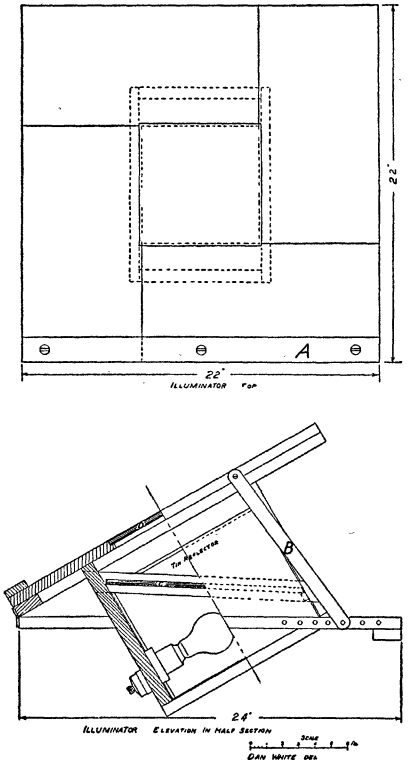
SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN ILLUMINATOR TO FACILITATE THE TRACING OF X-RAYS

IN studying x-rays of the organs of speech it is frequently necessary to make tracings of the films. Manufactured illuminators, intended for viewing films, are inadequate for tracing. They provide no surrounding board to which materials may be fastened; they are not convenient to work on; they heat up rapidly; and they are expensive.

The illuminator shown in the figure can be made cheaply and has none of these disadvantages. It consists primarily of an ordinary drawing board which can be tilted to any convenient angle by shifting the support (B). The strip (A) prevents objects from sliding off. A removable glass (D) of the appropriate size is set in the center of the board. Clear or opalescent glass may be substituted at will. (C) is a piece of clear glass between the bulb and the surface glass to deflect and absorb the heat. It, also, is removable to permit easy changing of the lamp. The tin reflector spreads at the sides to allow free ventilation. This illuminator has been used for several hours at a time without gettting hot.



Masks of black paper, to cover all but the parts being traced, are provided and may be pinned to the board. By their use lines in the x-ray which seem to have been obliterated by overexposure can frequently be found and traced.

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A LARGE RESPIROMETER[1]

IN making some studies of the catalase, nitrogen and carbohydrate changes in asparagus roots after various treatments to break dormancy it was thought desirable to have some information on the respiration while these changes are going on.

Many difficulties were experienced in finding a respirometer which could be satisfactory. Nothing found in the literature described containers large enough to hold the plant roots which were being studied. The usual NaOH containers were too small to hold the amount of carbon dioxide given off in a 48 hour period, and more frequent weighing and measuring was not thought worth while.

After many different set-ups were made and several

[1] Contribution No. 113, Department of Horticulture, Kansas Agricultural Experiment Station.