THE following promotions have been made at the University of Chicago: Dr. William Duncan MacMillan to professor of astronomy; Dr. Adolf C. Noé to associate professor of paleobotany, and Dr. Marion H. Loeb to assistant professor of anatomy.

DR. GEORGE R. BANCROFT, associate professor of physiological chemistry, has been promoted to the rank of full professor and head of the department of physiological chemistry in the School of Medicine of West Virginia University.

DR. FRANK E. RICE, assistant professor of chemistry at Cornell University, has been appointed professor of biochemistry at the North Carolina State College.

THE following additions to the staff of the department of physics of the University of Pittsburgh are announced: professor and head of the department, L. P. Sieg, of the University of Iowa; assistant professors, Richard Hamer, of the University of Wisconsin, and W. St. Peter, of the University of Michigan; instructors, Theodore Hunter, of the University of Iowa; M. H. Trytten, of Luther College, and J. J. Weigle, of the Westinghouse Research Laboratory.

ADJUNCT PROFESSOR P. M. BATCHELDER, of the University of Texas, has been appointed acting assistant professor of mathematics at Brown University for the academic year 1924–1925.

DR. OLIVER H. GAEBLER has been appointed associate in biochemistry in the department of chemistry in the State University of Iowa, and Dr. Earl R. Norris, instructor in the same department.

DR. P. B. SIVICKIS, professor and acting head of the department of zoology, University of the Philippines, was recently appointed permanent head of the department in place of Professor A. L. Day, retired.

DR. FRED M. SMITH, Chicago, has been appointed professor of internal medicine and head of the department of theory and practice of medicine at the State University of Iowa College of Medicine to succeed Dr. Campbell P. Howard, who resigned to accept the professorship of medicine at McGill University Faculty of Medicine, Montreal.

DR. ARTHUR W. M. ELLIS has been appointed to the university chair of medicine at the London Hospital Medical College. Dr. Ellis, during 1909–1910, was resident pathologist of the Lakeside Hospital, Cleveland, and demonstrator of pathology in the Western Reserve University School of Medicine.

DR. S. BRODETSKY, teacher in applied mathematics, at the University of Leeds, has been appointed professor of mathematics.

DISCUSSION AND CORRESPONDENCE

A MATHEMATICAL BLACK SHEEP

THE most noted mathematical black sheep is doubtless H. Cardan (1501–1576) whose name is usually associated with our common formula for the solution of the general cubic equation. In particular, he is often charged with having obtained this formula from Tartaglia under a solemn promise of secrecy and with having then published it in his noted "Ars Magna" (1545), in violation of this promise and without giving due credit to Tartaglia. Fortunately, some of the more recent mathematical historians have come to the conclusion that his actions in this connection are not as reprehensible as earlier writers had supposed. The formula which he obtained from Tartaglia may have been due to an earlier Italian writer named Ferro, and, in fact, this formula is called *Ferro's formula* in one of our best recent histories of elementary mathematics, Tropfke, "Geschichte der Elementar-Mathematik," Volume 3, 1922, page 73, and elsewhere.

In an article entitled "Psicologia dei matematici," published in a recent number of *Scientia,* Volume 35, 1924, page 10, the noted Italian mathematical historian, G. Loria, states that the autobiography of H. Cardan entitled "De vita propria" is of little value as a historical document in view of the fact that its author wisely abstains from replying to the charges made against him. Since the common biographical sketches are largely based on this autobiography many of the charges contained in these sketches have not been established. It seems very fortunate that the blackest sheep among the eminent mathematicians is thus slowly changing color for the better. This will be especially interesting to those who believe that the devotion to mathematical study has a tendency to nobler thinking and the improvement of morals.

In the article to which we referred, G. Loria emphasizes the fact that most of the biographical accounts of mathematicians, especially those relating to the thinkers of antiquity, have little historical value since they are based largely on anecdotes and grandiloquent praises of doubtful authority. This is of considerable interest in view of the fact that most of our general histories of mathematics devote much space to such biographies. From the fact that it is difficult to purge the literature from such obvious biographical errors as the one relating to the supposed welcome given by Regiomontanus to Copernicus, while the latter was in Rome (SCIENCE, Vol. 60, p. 82), it is clear that it is almost hopeless to eliminate the less obvious ones, especially when they relate to the less prominent scientists. Too many mathematical historians have accepted statements which appear plausible and can not be disproved at the present time

instead of restricting themselves to what is based on strong evidence.

G. A. MILLER

UNIVERSITY OF ILLINOIS

TRANSMISSION OF COWPEA MOSAIC BY THE BEAN LEAF-BEETLE

OBSERVATIONS on the occurrence of the bean leaf-beetle (*Ceratoma trifurcata* Forst.) indicate that this insect may be responsible for the spread of cowpea mosaic, a little understood but serious disease of cowpeas. This disease, which is now known to be present in Louisiana, Arkansas and Indiana, causes mottling and crinkling of the cowpea leaves. The injury is similar to that found on most other mosaic-affected, dicotyledonous plants, the leaves being greatly distorted and the internodes shortened.

Insects associated in greatest numbers with cowpea plantings showing disease included the bean leaf-beetle (*Ceratoma trifurcata* Forst.), the belted cucumber beetle (*Diabrotica balteata* Lec.), the green stink-bug (*Nezara viridula* L.), and the alfalfa-infesting treehopper (*Stictocephala festina* Say).

Preliminary experiments during 1921 proved that the bean leaf-beetle transmitted the disease, while tests with the green stink-bug and the treehopper were negative. Additional experiments performed in 1922 and 1923 further demonstrated that the bean leaf-beetle is a definite and efficient carrier of cowpea mosaic.

It was established that insects which had fed for one day on diseased plants and were then transferred to healthy plants transmitted the disease in practically every case. Beetles retained as controls and confined on healthy plants did not transmit the disease when transferred to other healthy plants. Some infection of healthy plants was obtained by inoculation with regurgitated juice or abdominal contents from beetles which had previously fed on diseased plants.

Unmistakable symptoms of the disease were found to appear on healthy plants within five days after the beetles had been introduced into the cages containing these plants, but the average period throughout the season was seven days. In a few cases mosaic appeared on leaves which were very small at the time of inoculation, but as a general rule, only foliage appearing subsequent to inoculation developed readily recognizable symptoms of the disease.

Some artificial transmission of the disease was accomplished by rubbing the leaves of diseased and healthy plants together. In a limited number of experiments mosaic was readily transmitted from diseased to healthy plants by inoculation with a needle.

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ALKALINE REACTION OF THE COTTON PLANT

MR. C. M. SMITH in an article, "Excretions from the leaf as a factor in arsenical injury to plants," read before the New Haven meeting of the American Chemical Society, has pointed out that dew collected from the cotton plant is alkaline.

It seemed possible to the writer that this alkalinity was connected in some way with the attraction of the cotton plant for the boll weevil. The following experiments were therefore tried.

The leaves and stems of young cotton plants were crushed and immersed in water containing a few drops of phenol-phthalein. No apparent alkalinity was produced. (Distilled water was not available.)

When the unbruised plant was placed in the water containing the phenol-phthalein it was found that the under side of the leaf, the tender buds and very tender stems showed an alkaline reaction distinctly apparent by the almost immediate change in color of the phenol-phthalein adjacent thereto. No evidence of such alkalinity could be observed on the upper side of the leaf nor on the older parts of the stems, etc.

The solution of the alkaline substance in the water was apparently heavier than the water, as a distinct tendency for the purplish color to sink was noted.

On exposure of the under side of the leaf to the sun for some hours no apparent diminution in the alkalinity of the under side of the leaf took place.

Some thirty or forty different kinds of leaves were next tried in the same way. Similar, though much less, alkalinity was noted only in the case of leaves from okra. Since the okra is related to the cotton plant and since the boll weevil can be forced to feed upon this plant, some significance may attach to that fact. It is known, however, that certain other plants are known to form alkaline substances.

It was not possible at the time to attempt to identify the nature of the alkaline substances. Nor were forms, blooms or bolls available. Even the possibility of selective adsorption having produced the apparent alkalinity was not excluded.

Mr. Smith seems to think that there is something in his analysis of the dew (showing calcium and magnesium carbonates and bicarbonates) to account for the alkalinity observed. Since both acid and normal alkaline earth carbonates are neutral to phenolphthalein, this would hardly seem possible. Alkali carbonates, if present, would cause alkalinity. Careful examination should be made for the presence of an organic alkaline compound and to find if the alkalinity observed has anything to do with the preference of the boll weevil for the cotton plant.

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