centers was influenced, in part, by a consideration of the needs and the local possibilities for absorption of the appropriated sums during 1932. For the hospital units the subsidies allowed amount to 180,000,000 francs. Subsidies amounting to 30,000,000 francs were accorded to societies that support the crusade against child mortality. The sum of 5,000,000 francs was granted to the vacation camps and the camps located adjoining hot springs. As regards the organizations carrying on the crusade against the social diseases, it will be observed that the anticancer centers are to receive 27,000,000 francs; the societies devoted to the eradication of venereal disease, 16,000,000; the sanatoriums, 33,000,000; the preventoriums, 21,250,000; the antituberculosis dispensaries, 2,960,000, and the schools for the training of nurses, 15,590,000. Certain societies that have an appeal from the scientific or social point of view are to receive efficient financial aid; such, for example, as the Institut du radium of the Curie Foundation, 12,500,000 francs; the anticancer center at Villejuif, 12,500,000; the Renaissance sanitaire (hospitals of the mutual aid societies), 11,500,000; the Ecole de puériculture de la Faculté de médecine de Paris, 8,091,000; the Foch Foundation, 4,000,000, and the society for the mutual protection of railway employees, 2,000,000.

IT is reported in the London *Times*, that after having been lost, perhaps for centuries, fossils which formed part of the first geological collection at Oxford have been discovered at Oriel College. The discovery is announced by Mr. R. T. Gunther, curator and secretary of the Lewis Evans Collection, which is housed in the Old Ashmolean Museum. In the annual report Mr. Gunther states that the collections illustrating the original association of the Old Ashmolean with the study of natural history in Oxford have received a most unexpectedly appropriate addition from Oriel College in the form of a small oak chest-of-drawers containing some early natural history specimens dating from the beginning of the eighteenth or perhaps from the end of the seventeenth century. The college has had this cabinet cleaned and repaired and deposited with the Lewis Evans Collection for examination, with the result that some of the contents have been discovered to be a part of the great Lhuyd collection of fossils which passed to Oxford at the death of Edward Lhuyd, the Celtic scholar and naturalist and second-keeper of the Old Ashmolean. How the fossils came to be removed from the Old Ashmolean and lost will probably always remain a mystery. Most of the fossils are inclosed in their original paper wrappings inscribed with the name of the locality and a serial number, all of which have been discovered to agree with the descriptions written by Lhuyd and published by him in 1699 in his pioneer work on British paleontology. The fossils that have been discovered are therefore of the highest historical interest, not only because they were part of the first geological collection in Oxford and a part of the world-famed Ashmolean collection, but especially because they are the original type specimens described and in some cases figured by Lhuyd in his classical work.

DISCUSSION

THE WORD ALGEBRA

FEW terms in elementary mathematics have such an interesting history as the word algebra. In the first place it is one of the few mathematical terms which were derived directly from the Arabian language and point to the time when the center of mathematical activity was among the Arabs and the Persians. In the second place a number of different views as regards the meaning of this term have been published, and quite recently Professor O. Neugebauer, Göttingen, Germany, supported a view which is in disaccord with the ones commonly adopted in our histories of mathematics and elsewhere. This view was published earlier as a hypothesis by S. Gandz and appears now also in the opening note of volume 2 (1932), "Quellen und Studien zur Geschichte der Mathematik," part entitled Studien.

It is well known that the term algebra has been derived from the title of a work written in about 825 by a Persian mathematician named Mohammed ibn Musa, al-Khowarizmi. The title of this work has been transliterated somewhat differently in various of our larger dictionaries as well as in the histories of mathematics. One of these transliterations is as follows: *al-jabr w'al muqabalah.* A common translation of the former of these terms, which actually gave rise to the word algebra, is the transformation of an equation which involves positive and negative terms so that only positive terms appear in each member of the equation, and it has been noted that the Greek mathematician Diophantus emphasized this transformation. In the article noted in the preceding paragraph Professor O. Neugebauer supports the view that *muqabalah,* which is the second term in the given title, is simply the Arabic translation of the former term in the title which is of Assyrian origin and means an equation.

If this view is correct practically all the explanations of the meaning of the term algebra which appear in the literature are in need of revision. What is

perhaps more important in this connection is the fact that there seems to be no scientific reason why the common explanations of the terms in question were adopted. These explanations seem to have originated at a time when it was customary to publish historical views without any supporting evidences and to assume that interesting views which appeared reasonable should be regarded as correct as long as they could not be disproved. Fortunately, the history of mathematics is now rapidly abandoning some of these views and the evidences reported in the article noted above make it very probable that the wide-spread views in regard to the term algebra will soon belong in this category, and that this term has a much more dignified etymological meaning than has been commonly supposed.

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CROSS-INOCULATION STUDIES WITH SPECIES OF THE GENUS RHIZOBIUM ON THE ROOTS OF FLORIDA LEGUMES

IN the year 1886 Hellriegel and Willfarth made the brilliant deduction that legumes succeeded in very poor soil because of the presence of nitrogen-fixing bacteria in the root nodules. Since that time wide recognition has been given to the importance of inoculation in the cultivation of leguminous crops.

The question of specificity of these nodule bacteria for the host plant was investigated by J. Simon in 1914 and by many others since that time. At present there seem to be eighteen recognized plant groups as determined by cross-inoculation tests. There are still many uninvestigated species of cultivated and wild legumes bearing root nodules. The aim of this project is to classify on a cross-inoculation, morphological, physiological and serological basis the bacteria from as many of Florida leguminous species as facilities will permit.

Since Crotolaria has become an important forage and cover crop and several inquiries have been made concerning inoculating material, it was decided to consider the bacteria from the species of this genus early in the course of the investigation.

Satisfactory cross inoculations were made on *Vigna sinensis* with nodule bacteria isolated from the following species of Crotalaria: Alata, falceta, hilderbranti, incana, intermedia, maxillaris, mundyi, oocarpa, polysperma, rotundifolia, spectabilis and mysorensis. Also, bacteria from nodules of *Erythrina herbacea, Clitoria ternata, Aeschynomene americana* and *Colopagonia mucunoides* produced good nodules on the roots of *Vignia sinensis.* Attempts to make similar crosses with cultures from *Crotalaria angyroides* and other species failed or were unsatisfactory.

Bacteria isolated from nodules on the roots of *Trifolium procubiens* gave good inoculation on the roots of *Trifolium hybridum.*

Details with references and acknowledgments will appear later.

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THE PRESENCE OF A DISTINCT INSULIN IN DEPANCREATIZED DOGS AFTER PANCREATECTOMY[1]

THE criticism of the above article by Soskin (SCIENCE, April 8, 1932) is based upon a misconception of the purpose of the article. Its purpose was to logically demonstrate the existence of a distinct insulin in depancreatized dogs after operation, and was not an attempt to reinterpret any findings of his, or to discuss the "Overproduction Theory of Diabetes," which I have thoroughly treated in another recent communication.[2]

The sole purpose of my article was to prove that there must be, of necessity, some form of insulin present other than the pancreatic, in the dog after operation, because carbohydrate metabolism still continues, and the heat and energy released in this process is still furnished to the dog for its life functions during a period of 18 days.

As my main premise I use the fact established by my own calculations from the table of Soskin's Dog No. 6, Table IV—that this dog, entirely deprived of its pancreas, still metabolizes 60 per cent. of the total glucose of its food.

Two other minor premises support the preceding: (1) Animals below vertebrates oxidize glucose and deposit glycogen without the aid of a pancreas since they have none; (2) Glucose can not be oxidized nor glycogen deposited without the assistance of insulin (all severe diabetic cases prove this).

From the above premises I derive the final conclusion that an extra-pancreatic (or cellular) insulin must exist in the dog after pancreatectomy.

The consideration of R. Q's, D to N ratios, blood sugars, increased or decreased "gluconeogenesis," and other disputed variables, have no part in the simple argument and conclusion stated; nor does the fact that a few eminent research workers have failed to extract cellular insulin from animal tissues militate at all against the strength of the above argument, since the period of over 30 years between the time of Minkowski and Banting was filled with dozens of

[1] *N. E. Jour. of Med.*, Jan. 7, 1932.
[2] *Medical Times and Long Island Med. Jour.*, February, 1932.