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.