strange Sublimation of the Flores began to be made; and increased with it; even before any Fire was used. . . .

. . . After seven Hours a Hole was eaten thro' the Retort, and Fumes issued: But this was closed by a Crust formed of the matter within; and so well stopped, that no Vapour escaped. . . .

The final appearance of the retort and nature and properties of the products of the reaction are described. It is of interest that nowhere in this note is the term "hydrofluoric acid" employed; the mineral is on one occasion termed "fluor." Another omission for which no explanation is attempted, is the neglect of mentioning Scheele, his work, or the previously published observation. Throughout the text the only allusion made as to the original work is the term "the Swedish acid or stone." In this note Hill discusses the rôle of this acid as a "mineralizer" in ore deposits. This is also an uncredited observation and was "rediscovered" many years later. Many other novel and seemingly precocious notations are recorded.

The remarkable accuracy and extensiveness of these observations are to be marvelled at when one considers the many fields of learning in which Dr. Hill ably distinguished himself. Surprisingly little has been written concerning his life or accomplishments. Recently Dr. L. L. Woodruff, of Yale University, has published an excellent summary of this interesting man's career[3] for whom "One has but to turn the pages of London's print from 1750 to 1775 to meet his name." This short treatise gives a very clear, fair and intensely interesting outline of perhaps the most brilliant and least known character appearing in the history of science.

Dr. Hill wrote extensively on many subjects, completing an almost unbelievable number of treatises during his life. It has been said that "This gentleman may very justly be estimated as a phenomenon in literary history—he was perhaps one of the most voluminous writers that this or any other age has produced."

The diversity of his interests is indicated by the comprehensive number of subjects to which he made distinct contributions. His writings concern medicine, botany, zoology, astronomy, theology, philosophy, gardening, microscopy, pharmacology, animal husbandry, etiquette, mineralogy, naval and other histories, and in spite of all these studies he found time to edit *The British Magazine,* write a series of daily essays for a number of years, as well as publish several stories and plays. He was embroiled in innumerable polemics and wrote several satirical articles, one of the most interesting being "A Review of the Works of the Royal Society of London; containing animadversions on such papers as deserved particular observation," London, 1751, in which he ridicules some eighty original contributions to the society. This and several other articles of a similar nature made many his enemy, and yet one said, as Dr. Woodruff notes, "he was of all men I ever knew so mixed a character, none but himself can be his parallel."

[3] *The American Naturalist,* Vol. LX, 417–441 (1926).

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ORGANIC FERTILIZERS AND COTTON WILT CONTROL

IN a recent note (SCIENCE, n. s., Vol. 65, No. 1695, p. 616–617) H. R. Rosen refers to his experiments which indicate that no toxic effects are produced by *Fusarium vasinfectum* on cotton plants when organic nitrogen is used in the culture medium, and he suggests the possibility of field control of cotton wilt by the use of organic fertilizers. He states: "Orton's findings (U. S. Dept. Agr. *Farmers' Bul.* 333, 1910), which have doubtless acted as a deterrent in the use of organic fertilizers for the control of wilt, are based on very little experimental data, and his results are contradicted by the work of Fulton (La. Agr. Exp. Sta. Bul. 96, 1907). The writer has some data which seem to confirm Fulton's work."

The following quotations from the above-cited publication of W. A. Orton relate to the use of stable manure and other organic material in the practical control of cotton wilt where nematode root-knot is usually a complicating factor: "The application of stable manure has been recommended as a remedy for wilt. Our experience has been that in slightly infected fields this does give some relief, but that the wilt takes the field in the end in spite of the heaviest manuring. The use of stable manure in growing resistant varieties of cotton has been very profitable however." Under the caption "Combined treatment of wilt and root-knot" he enumerates the following among the essential principles to be observed in arranging a rotation of crops: "(1) To use crops immune to root-knot in order to starve out this pest. (2) To build up the fertility of the soil, and especially to increase the amount of organic matter or humus." Definite rotations of soil-improving crops are then suggested in detail.

My recommendation of stable manure for cotton wilt control was based on two seasons' tests at Baton Rouge, Louisiana, on land very heavily infested with *Fusarium vasinfectum* and lightly infested with root-knot nematodes. It was not put forward as a sole preventive, but was to be used in connection with other control measures, such as the use of wilt-resistant cotton varieties and a crop rotation to reduce infestation.

Rosen himself thinks that "if nematodes are present, then the use of organic matter in such soil will not remove the possibility of wilt development, although it may partially alleviate the losses that might be incurred by stimulating the growth of the plant."

It is thus apparent that there is fundamentally very little difference in the three views in so far as they relate to the practical use of organic fertilizers in cotton wilt control under usual field conditions. Rosen's present important work will doubtless stimulate further detailed investigation of the effectiveness of organic matter in the control of cotton wilt in the field, and it is hoped will lead to more extensive practical use of such material by cotton farmers, as has always been recommended as good practice by the pathologists of the U. S. Bureau of Plant Industry.

In this general connection reference may be made to the recent work by C. J. King and H. F. Loomis, of the U. S. Bureau of Plant Industry, on the control of cotton root-rot caused by *Phymatotrichum* (*Ozonium*) *omnivorum* (*Jour. Agric. Res.*, 32: 297–310, 1926), which is summarized in part as follows: "Experiments conducted in the Salt River Valley and at Sacaton, Arizona, to test the effects of manure and other organic materials on the control of root-rot have consistently shown a reduction in the infected area and the number of cotton plants dying from the disease following the treatment."

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PLASMA CALCIUM

ACCORDING to the observations of Dr. J. B. Collip as reported in *The Journal of Biological Chemistry*, Volume LXIV, June, 1925, the thyroparathyroidectomized dog is no more responsive to the plasma calcium-raising principle contained in a hydrochloric acid extract of bovine external parathyroid glands than the normal dog.

Several tests on the effect of such an extract, prepared according to the method of the writer, have convinced us that the thyroparathyroidectomized albino rat is much more responsive to the calcium-raising principle than the normal albino rat.

The parathyroid preparation used in these tests was one which had previously been standardized by testing its reaction on normal dogs. Fifteen milligrams of the preparation in 0.85 per cent. sodium chloride solution produced an increase in the plasma calcium of a 12 to 13 kilogram dog, 3 to 4 milligrams, 15 to 17 hours following subcutaneous administration.

The potency of this preparation is further illustrated by citation to an experiment in which 60 milligrams was administered, in four doses of 15 milligrams each, to a 13.6 kilogram dog, during the course of 48 hours. During that time six plasma calcium determinations were made. The initial calcium value was 11.85 and the terminal value at which death occurred was 26 milligrams per 100 cc. of plasma.

When 15 milligrams of this preparation was administered to several normal albino rats, no noticeable increase above the normal value was found after seventeen hours. Thirty milligrams administered in two equal doses seventeen hours apart were necessary to produce an increase of approximately 5 milligrams in the plasma calcium of a normal rat.

Nine milligrams of the preparation was found to double the plasma calcium of a thyroparathyroidectomized rat of approximately the same weight, while 15 milligrams gave a value of 17.5 milligrams per 100 cc. of plasma.

We also found that as in the dog the plasma calcium value of the rat begins to drop very soon after parathyroidectomy. After reaching a value between 5 and 8 milligrams per 100 cc. of plasma, the calcium value has been found the same 200 days following thyroparathyroidectomy.

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THE ANCIENT AMERICAN CIVILIZATIONS AND CALENDARS

UNDER the above title and within a period of eight months I recently made a communication, consecutively, to the British Association for the Advancement of Science in Oxford, the International Congress of Americanists in Rome, the Anthropological Society of Washington, D. C. and the Sociedad Cientifica "Antonio Alzate" in Mexico City.

In this communication I first pointed out that all the ancient American centers of civilization were situated between the tropics; that within this zone the year consists of two seasons only: the dry and the wet and a striking phenomenon occurs, namely, the passage of the sun through the zenith twice a year, at irregular intervals, according to the differences of latitude.

I next submitted irrefutable historical, documentary, archeological and pictorial proofs that the ancient astronomer-priests, inhabiting even widely separated parts of this tropical zone, observed the phenomenon by means of gnomons consisting of upright poles, stelae, pillars, altars or constructions with vertical walls, and interpreted the periodically recurring total disappearance of their shadows about noon, as