and inorganic phosphorus in soil solutions and extracts. Another paper gave data showing the amounts of each form of phosphate in the displaced solutions and 1:5 water extracts and also presented results showing that the organic phosphate was not absorbed by plants. Subsequent studies have given additional data on the forms and properties of the water soluble phosphorus in soils.

While studying the decolorization of soil solutions by the use of carbon black, it was noted that the carbon absorbed a considerable portion of the organic phosphate but very little of the inorganic phosphate. Further studies showed that while a considerable part of the organic phosphate was readily absorbed by the carbon black, another portion was not easily removed by the use of carbon black. This is evident from the results of an experiment in which 100 cc. portions of two soil extracts were treated with 0.20, 0.50, and 2.00 gms. of carbon black. The results of the experiment are given in table 1.

TABLE 1

AMOUNTS OF INORGANIC AND ORGANIC PHOSPHATE IN SOIL EXTRACTS RECEIVING THE CARBON BLACK TREATMENTS INDICATED.

Treatment per 100 cc. extract	Extract 449		Extract 561	
	Inorganic PO_4	Organic PO_4	Inorganic PO_4	Organic PO_4
	p.p.m.	p.p.m.	p.p.m.	p.p.m.
None	0.58	0.38	Trace	0.24
0.20 gm. carbon	0.61	0.23	Trace	0.12
0.50 gm. carbon	0.61	0.23	Trace	0.12
2.00 gm. carbon	0.51	0.21	Trace	0.12

The treatment with 0.20 grams resulted in the adsorption of 0.15 p.p.m. and 0.12 p.p.m. organic phosphate. Increasing the amount of carbon black to 2.0 gms. did not increase the amount of organic phosphate adsorbed. Similar results have been secured with extracts of other soils and with some displaced soil solutions.

In another experiment two soil extracts and a soil solution were treated one, two and three times with 0.50 gms. of carbon black. In all cases the first treatment resulted in the adsorption of considerable organic phosphate while the second and third treatments removed very little additional phosphate.

These results seem to indicate the presence of at least two forms of organic phosphate in soil extracts and solutions. One form is very readily adsorbed by carbon black while the other form is adsorbed in small amounts if at all. The relative amounts of the two forms seem to vary somewhat in the extracts and solutions from different soils. In general, however, they are usually present in approximately equal amounts. Neither form seems to be associated with the coloring matter of the extract or solution as many extracts that are practically colorless contain considerable amounts of both forms.

All the organic phosphate is apparently rather stable toward heat. Soil extracts and a soil solution were boiled two hours under a reflux condenser without materially increasing their content of inorganic phosphate.

Experiments with aluminum hydrate, prepared by the method of Emerson, as a decolorizing reagent have shown that it removes all of the inorganic phosphorus from solution but does not adsorb all of the organic phosphate. It does, however, adsorb some organic phosphate, probably the same portion that is readily adsorbed by carbon black. Increasing the amount of aluminum hydrate ten times did not increase the adsorption of organic phosphate.

These results confirm those previously reported showing that soil solutions and extracts contain considerable quantities of organic phosphate as well as inorganic phosphate. They further indicate that there are at least two forms of organic phosphate. Additional studies should be made to determine other properties of the organic phosphate including its rate of decomposition by biological action.

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THE AMERICAN PHILOSOPHICAL SOCIETY

THE annual general meeting of the American Philosophical Society will take place in Philadelphia on April 19, 20 and 21. Following is the preliminary program of the sessions for the reading of scientific papers:

Thursday, April 19, at 2:00 P. M.

Francis X. Dercum, president, in the chair

Tundra vegetation of Central Alaska: JOHN W. HARSHBERGER, professor of botany, University of Pennsylvania.

Features of cells that live long: DANIEL T. MACDOUGAL, director of the laboratory of plant physiology, Carnegie Institution of Washington.

A geno-geographical study of the genus Bursa: GEORGE H. SHULL, professor of botany and genetics, Princeton University.

Trianaeopiper, a new genus of Piperaceae: WILLIAM TRELEASE, professor of botany, University of Illinois.

Cell division and differentiation: EDWIN G. CONKLIN, professor of biology, Princeton University.

Probable rôle of internal secretions in structure and growth as illustrated by breeds of dogs and peculiar types in man: CHARLES R. STOCKARD, professor of anatomy, Cornell University.

Functions of the internal secretions or endocrine organs that scientific progress has sanctioned: CHARLES E. DE M. SAJOUS, professor of endocrinology, University of Pennsylvania, Graduate School of Medicine.

Cod-liver oil and the cod: ALFRED F. HESS, clinical professor of pediatrics, University and Bellevue Hospital Medical College, New York City. (Introduced by Dr. Dercum.)

Different rates of growth among animals: PHILIP P. CALVERT, professor of zoology, University of Pennsylvania.

Friday, April 20, at 10 A. M.

Henry Fairfield Osborn, vice-president, in the chair

Omorphamphus, a new flightless bird from the Eocene of Wyoming: WILLIAM J. SINCLAIR, associate professor and curator, Princeton University.

The reports of the Princeton University expeditions to Patagonia: WILLIAM B. SCOTT, professor of geology, Princeton University.

The astrapotheria of the Miocene of Patagonia: WILLIAM B. SCOTT, professor of geology, Princeton University.

Were the ancestors of man primitive brachiators? WILLIAM K. GREGORY, professor of paleontology, Columbia University. (To be read by Francis Montague Ashley-Montagu.)

Racial characters in human dentition: MILO HELLMAN, New York City. (Introduced by Dr. Osborn.)

Present status of the problem of human ancestry: HENRY FAIRFIELD OSBORN, American Museum of Natural History.

Flood control: ARTHUR E. MORGAN, president of Antioch College. (Introduced by Dr. Conklin.)

Storms which issue from the inland-ice of Greenland: WILLIAM H. HOBBS, professor of geology, University of Michigan.

A guide book to the world's weather and climates: ROBERT DEC. WARD, professor of climatology, Harvard University.

Friday afternoon at 2:00 P. M.

Cyrus Adler in the chair

SYMPOSIUM ON AVIATION

Commercial aspects of aviation: WILLIAM P. MACCRACKEN, JR., assistant secretary of commerce for aeronautics.

The application of aerodynamics: EDWARD P. WARNER, assistant secretary of the Navy for aeronautics.

Lighter than air machines: C. E. ROSENDAHL, lieutenant commander, U. S. Navy.

Heavier than air machines: C. H. BIDDLECOMB, New York City (formerly major in the Royal Air Force).

Meteorology for aviation: WILLIAM R. BLAIR, major, Signal Corps, U. S. Army.

Friday evening

Reception from 8 to 11 o'clock in the Hall of the Historical Society of Pennsylvania.

RICHARD P. STRONG, professor of tropical medicine in Harvard University, will speak on "Studies of Human and Animal Diseases made during the Recent African Expedition."

Saturday morning, April 21, at 10:00 A. M.

William W. Campbell, vice-president, in the chair

Can business be made a science? EMORY R. JOHNSON, professor of transportation and commerce, University of Pennsylvania.

Some economic implications in America's changing world status: ERNEST M. PATTERSON, University of Pennsylvania. (Introduced by Dr. Johnson.)

An enactment of fundamental constitutional law in old South Arabia: JAMES A. MONTGOMERY, professor of Hebrew and Aramaic, University of Pennsylvania.

Textual criticism of the Greek Old Testament: MAX L. MARGOLIS, professor of biblical philology, Dropsie College for Hebrew and Cognate Learning.

Research in education: FRANK PIERREPONT GRAVES, president of the University of the State of New York.

An early Colonel House: Unofficial missions to England in 1842 and 1843 of General Duff Green: ST. GEORGE LEAKIN SIOUSSAT, professor of American history, University of Pennsylvania. (Introduced by Dr. Lingelbach.)

Fact: HENRY OSBORN TAYLOR, New York City.

Noah, a suggestion: ROBERT P. FIELD, Philadelphia.

Saturday afternoon at 2 P. M.

Francis X. Dercum, president, in the chair

Metabolism in the tropics: A study on some browns and blacks in Jamaica: FRANCIS G. BENEDICT, director of Nutrition Laboratory, Carnegie Institution of Washington, and Morris Steggerda.

Racial chromosomal differences in Datura and their bearing on differentiation of species: ALBERT F. BLAKESLEE, assistant director in plant genetics, Carnegie Station for Experimental Evolution, Cold Spring Harbor.

Influence of groups containing sulphur on the color of azo dyes: E. EMMET REID, profesor of chemistry, Johns Hopkins University. (Introduced by Dr. Smith.)

A method for determining the constants of electrical engineering, Harvard University: ARTHUR E. KENNELLY, professor of electrical engineering, Harvard University.

Discussion of the kinetic theory of gravitation IV: Correlation of continual generation of heat in some substances, and impairment of their gravitational acceleration: CHARLES F. BRUSH, president of the Cleveland Chamber of Commerce.

A search for the galactic center: HARLOW SHAPLEY, director of the Harvard Observatory.

The distances of the stars: SAMUEL A. MITCHELL, professor of astronomy and director of the Leander McCormick Observatory, University of Virginia.

Saturday evening, April 21, at 7:30 P. M.

Annual dinner in the north room of the Bellevue-Stratford Hotel.