

The curves plotted from the results of the determinations made on acid soils and on the decomposition products of the soil-forming minerals are similar to the one described above, while those made on neutral or alkaline soils are similar to lines *bc* and *cd* of that curve. This apparently indicates that there are some dissociated acids or acid salts present in the solutions of acid soils, and of the decomposition products; and that with all of the materials some of the calcium hydroxide is entirely removed from the field of action. These statements are interesting, especially when compared with the conclusions drawn in regard to soil acidity from results obtained by the freezing¹ point method. The conclusions

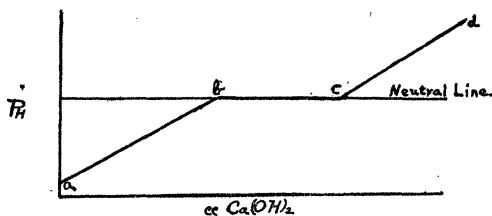


FIG. 1.

by that method are contrary to the former of the above statements, but agree with the latter.

Some other interesting facts concerning these curves are that where they first reach the neutral line, they show a lime requirement as determined by the so-called Jones² method; and that where they leave the neutral line, they may indicate what Sharp³ and Hoagland term "potential acidity" or what Bouyoucos⁴ terms "maximum lime requirement." It is also interesting to note that the curves vary somewhat when bases other than calcium hydroxide are added to soils. Barium hydroxide gives rise to curves similar to calcium hydroxide, while sodium and ammonium hydroxides gives curves represented by lines *ab* and *cd* in the above figure.

¹ Mich. Agric. Col. Exp. Sta. Technical Bul., No. 27.

² Jour. A. O. A. C., Vol. I., p. 43.

³ Jour. Agric. Research, Vol. VII., p. 123.

⁴ Mich. Agric. Col. Exp. Sta. Technical Bul. No. 27, p. 37.

This work is being continued with the hope that within a short time sufficient data will be obtained to warrant a more complete discussion of the subject.

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ALABAMA MEETING OF THE ASSOCIATION OF AMERICAN STATE GEOLOGISTS

ONE of the most successful and profitable annual field meetings of the Association of American State Geologists was held in Alabama, September 1 to 6, 1919, on invitation and under the able guidance of the state geologist, Dr. Eugene A. Smith. Headquarters were at the Tutwiler Hotel, Birmingham.

An instructive printed guide of 14 pages briefly summarizing the essential geologic features to be observed at each place visited in the state was prepared by Dr. Smith and associates. As originally planned, the program called for a division of the party into two sections (Highland and Coastal Plain), to be together only on the first and last days. This plan was later modified to exclude the Coastal Plain section, but was closely adhered to for the Highland section, which closed with a visit to the University of Alabama, so long and well known to geologists as the home of the distinguished host, Dr. Smith.

Much of the Highland region of the state, long known for its varied and complex geology, was covered by excursions, and many of the interesting features of physiography, structure, stratigraphy and economic geology, were reviewed. Among some of the more important localities visited were the famous Birmingham district, where opportunity was afforded for observing some of its more important geologic features, including visits to iron and coal mines, limestone quarries and industrial plants; the extensive productive graphite area between Lineville and Goodwater, the largest domestic producer of graphite; the marble quarries near Sylacauga; and Sheffield and Florence where are located the government nitrate plant and prospective water-power developments at Mussel Shoals on Tennessee River.

The geologists participating in a part or all of the excursions were: Eugene A. Smith and W. F. Prouty (Alabama), J. A. Bownocker (Ohio), G. F. Kay (Iowa), H. B. Kümmel (New Jersey), I. C. White (West Virginia), W. N. Logan (Indiana), S. W. McCallie and J. P. D. Hull (Georgia), W.

O. Hotchkiss (Wisconsin), Collier Cobb (North Carolina), H. F. Cleland (Massachusetts), Herman Gunter (Florida), W. A. Nelson (Tennessee), George Otis Smith, E. O. Ulrich and Charles Butts (Washington, D. C.).

THOMAS L. WATSON,
Secretary

THE AMERICAN CHEMICAL SOCIETY. VII

DIVISION OF BIOLOGICAL CHEMISTRY

I. K. Phelps, *Chairman*

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Chemotherapy of organic arsenicals: C. N. MEYERS. A discussion of the transitions of arsenic therapy leading up to the production of salvarsan. A chart showing the methods of approaching the mother substance is presented. The reduction process is briefly discussed, followed by a consideration of the chemical and physical properties, the toxicology, the impurities, and the preservation of salvarsan. The chemical and physical factors as related to the administration of the drug are discussed based upon clinical observations as a result of an extensive investigation of the methods used by leading dermatologists. Standard methods are recommended in order to eliminate reactions which unnecessarily result from faulty technique and improper use of chemical laws when salvarsan is used in organotherapy.

The chemical composition of arsphenamine (salvarsan): G. W. RAIZISS.

A comparative study of the trypanocidal activity of arsphenamine and neo-arsphenamine: J. F. SCHAMBERG, J. A. KOLMER AND G. W. RAIZISS.

Chemotherapeutic studies with ethylhydrocuprein and mercurophen in experimental pneumococcus meningitis of rabbits: J. A. KOLMER AND GORO IDZUMI.

Coordination of the principles of chemo-therapy with the laws of immunity and the successful application in the treatment of tuberculosis: BENJAMIN S. PASCHALL. The tubercle bacillus is protected by waxy substances consisting chiefly of unsaturated highly complex alcohols and equal quantities of phosphatides with which they form a colloidal complex and which in turn exists in close union, possibly physical, more probably chemical, with the protoplasmic substances of the tubercle bacillus, both proteid and carbohydrate in nature. Saponification breaks up this complex without destruction of the important immunizing substances and makes

possible separation by solvents. By this means toxic and caseating substances of the Cholin Muscaria group are eliminated as well as the ordinary poisons elaborated by the tubercle bacillus proteins and protein derivatives. Esterification of the fatty acids with ethyl alcohol forms a valuable immunizing substance as these fatty acids have so far been found not to conform to those found in our common food products. Esterification of the higher alcohols with salicylic benzoic, acetic or other suitable acids establishes a new side chain or anchoring group which greatly enhances the reactivity between the antigens themselves and the receptors of the tissue cells so that absorption of these alcoholic esters takes place in the tissues in a few days without producing caseation and tissue necrosis even when given in doses of from 3 to 5 c.c., and following these injections of the mixed esters specific wax digesting ferments form in sufficient concentration to split the protective waxes from the tubercle bacillus living within the host whereby disorganization and destruction of the organism ensues and the patient absolutely recovers and remains well. Thus combining the principles of chemico-therapy with the laws of immunity, a new substance was found for the treatment of all forms of tuberculosis which was successfully used in our own practice and named by us Mycoleum.

The chlorinated antiseptics: Chloramine-T and dichloramine-T: ISAAC F. HARRIS, Ph.D., Research Laboratories, E. R. Squibb & Sons, New York. Toluene-p-sodium-sulfonchloramine (chloramine-T) when prepared in state of high chemical purity is an extremely stable compound, both in crystalline form and in solution. Toluene-p-sulfondichloramine (dichloramine-T) is quite stable when prepared in very high purity chemically dry and protected from dust, organic matter and sunlight. Pure dichloramine-T can be kept in pure, anhydrous chlorococane, without appreciable decomposition, for several months, if protected from continuous action of direct sunlight. In the reactions between the proteins of the tissues and Dakin's solution, chloramines of the proteins and free sodium hydroxide are formed. The latter furnishes the solvent power attributed to Dakin's solution. When the chloramines react with bacteria and necrotic protein matter, chloramines of the proteins are formed and toluene-p-sulfonamide is set free. The latter is inert and innocuous. The chloramines can be employed with more precision and in greater concentration than Dakin's solution.

An agent for the destruction of vermin-method of application: ALBERT A. EPSTEIN. (By title.)