

beginnings of such adaptive modification, and suggests plainly that the beetle's habits are probably already those of a habitual external parasite of its shrew and field mouse hosts, feeding (with simple biting mouthparts) on the dermal scales and hair.

Professor Van Dyke, of the University of California, our foremost Pacific coast student of the beetles, and from whom I have most of the information used in this note, writes that from the fact of finding *Leptinus* in the nests of bumble bees a number of entomologists have advanced the idea that the beetle lives normally in bumble bee nests and becomes accidentally carried from them by mammals that raid the nests. "This I do not agree with," says Dr. Van Dyke. Considering all of the circumstances of the few captures that have so far been made of the beetles, Dr. Van Dyke concludes that the beetle is a real parasite of the mice and shrews and "absolutely dependent on them in the same way that the Mallophaga are dependent on their hosts."

Another little beetle, *Leptinillus validus*, closely related to *Leptinus*, occurs on beavers in the Hudson Bay region. Still another beetle, *Lyrosoma opaca*, a Silphid (carrion beetle), is found in the North Pacific upon practically all of the islands and isolated ocean rocks to be found there. It breeds in rotten kelp and among old and broken murre's eggs, etc., and has been found prowling about the tenanted nests of the murre's. But it is wingless, and Dr. Van Dyke believes that it is carried from island to island and rock to rock by the roosting and breeding birds of these rocks and islands, the beetles accidentally seeking shelter among the feathers of brooding or perching birds, and thus being carried off by them when they take to flight. "Only in this way," writes Professor Van Dyke, "can I account for the presence of the beetles on Bogoslov Island [the famous recent volcanic island of Alaska], for this island is but little over one hundred years old, and the insects are so delicate that they could not possibly survive longer than a few minutes in the Arctic waters."

These stages in the change from a scav-

enger's life to that of an external parasite, shown by the series of beetles referred to in this note, are exactly parallel with the transition stages from the wingless Atropids (*Procidæ*) feeding on dry bits of dead organic matter, even to the feathers and organic detritus in birds' nests, to the Mallophaga, feeding on the same bits of feathers and dermal scales, but finding them on the bodies of the birds themselves, to whom they have come to bear the relation of permanent external parasites, with no longer any capacity to live off their hosts. The next step for some of the beetles to take would be to become like the Anoplura, and find a more acceptable food in the blood of the hosts. For this their mouthparts would have to be considerably modified, but that would be no difficult matter.

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#### SPECIAL ARTICLES

##### THE DECOMPOSITION OF SOIL CARBONATES

It has been found at the agricultural experiment station of the University of Tennessee, that excessive amounts of magnesium carbonate were entirely decomposed when left in contact with fallow soils in pots protected from leaching. Three types of soil were used, and the amounts of chemically pure precipitated carbonate of magnesia, equivalent to 16,000 pounds per acre of calcium carbonate were applied, in excess of the lime requirement, as indicated by the Veitch method. One year after the application the soils were analyzed and found to be strongly alkaline, but practically free of carbonates. Repetition of the experiment in metal rims, using 32,000 pounds of magnesium carbonate per acre, under field conditions, afforded the same observation in every one of eight treatments, four with magnesium carbonate alone and four with carbonate supplemented by manure, the analyses being made in this series after an eight weeks' period of contact. This work was begun in the spring of 1912 and final analyses were made in August, 1913.

It has hitherto been held that the conver-

sion of calcium and magnesium carbonates into silicates in soils has been due entirely to replacement of sodium and potassium and other bases in polysilicates. The writer and associates will shortly present in bulletin form conclusive evidence that magnesium carbonate reacts with and is fixed by silica ( $\text{SiO}_2$ ), and that calcium to a less degree acts in the same manner.

Titanium oxide, which chemically is closely allied to silica and which is usually present in soils, was found to bring about the same decomposition as silica. The evidence secured points strongly to the nonexistence of magnesium in the form of carbonate in soils of humid climates.

It is believed that this research will throw considerable light upon the use of dolomite in farm practise.

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AGRICULTURAL EXPERIMENT STATION,  
UNIVERSITY OF TENNESSEE, KNOXVILLE,  
February 16, 1914

THE AMERICAN ASSOCIATION FOR THE  
ADVANCEMENT OF SCIENCE

SECTION C—CHEMISTRY

ON the forenoon of Wednesday, December 31, joint sessions of Sections B and C were held in the Georgia School of Technology, with Vice-president Cole, of Section B, in the chair. The purpose of the meeting was a discussion of geochemical and geophysical topics; it is referred to further in the report of Section B.

The main sessions of Section C were held at the Winecoff Hotel on Thursday, January 1, with Dr. C. L. Alsberg, vice-president of the section, in the chair. This was a joint meeting with the Georgia Section of the American Chemical Society, the secretary of which had assisted in arranging the program. There was an attendance of between fifty and sixty, and considerable interest was evinced in all of the papers presented. In the evening a smoker—which indeed partook rather of the nature of a dinner—was tendered to the visiting chemists by the Georgia Section of the American Chemical Society; a number of topical verses and songs were sung and the whole affair was most enjoyable. The secretary desires to record here on behalf of the visiting chemists their appreciation of the hospitality of the Georgia

Section and to express thanks to it and to its secretary, Mr. J. S. Brogdon, for contributing so much towards the success of the meeting.

A brief account of the proceedings is appended.

The following resolution, presented by Professor Charles E. Munroe, was carried unanimously:

WHEREAS the Committee of this Section on Nomenclature and Notation presented at the Indianapolis meeting a report through its chairman, Dr. J. Lewis Howe, affirming the validity of the name and symbol columbium, Cb; and,

WHEREAS this report was accepted and adopted by this section; and,

WHEREAS the Committee on Inorganic Nomenclature of the International Association of Chemical Societies has reported on September 22, 1913, favoring the name and symbol niobium, Nb, for the element which was named columbium by its discoverer; and,

WHEREAS a later detailed investigation of the historical record by Dr. F. W. Clarke, a copy of the results of which is filed herewith,<sup>1</sup> finds no valid reason for the use of the name niobium;

Therefore be it resolved that we reaffirm our endorsement of the report of the committee of this section and view with regret this action of the committee of the International Association of Chemical Societies in advocating the use of the later name, thus introducing confusion where simplicity is sought.

Following this a vote of thanks, proposed by Professor Brackett and carried unanimously was accorded to the authorities of the University of Virginia, and in particular to Professor F. P. Dunnington, for their courtesy in allowing samples from their collection of the explosive materials used by the Confederacy during the War to be forwarded to Atlanta for use as illustrative material for Professor Munroe's lecture.

*The Cause of Osmotic Pressure:* W. V. METCALF.

After summarizing the different theories which have been advanced, the author presented a statement and defense of Le Blanc's theory, which, though the best explanation yet offered, has up to this time not attracted as much general attention as it deserves. On this theory osmosis is considered to result from the different internal pressures of solution and solvent, the internal pressure being the resultant of the normal components of the unbalanced molecular attractions at the free surface of the liquid.

*Some Possibilities of Georgia Clays:* CHARLES L. PARSONS.

In the state of Georgia all kinds of clays are to be found, so that there is no reason why all sorts of clay products should not be manufactured

<sup>1</sup> This has already appeared in SCIENCE, 39, 139-140 (1914).