the American Association for the Advancement of Science an application for a grant of funds. (Pursuant to an action taken by botanists at the dinner for all botanists.)

It was voted that the executive committee be informed that it is the consensus of opinion of the group present that the sections "bacteriology" and "cytology" be abandoned with the definite understanding that abstracts of articles in these fields be cared for by the other sections.

It was voted to appoint a committee, not confined to the board, whose duty it should be to prepare a list of all serials containing material to be abstracted for *Botanical Abstracts* and to appoint collaborators for such serials. J. R. Schramm was appointed chairman of the committee with power to select other members.

It was voted that the matter of including abstracts of zoological literature in *Botanical Abstracts* be left for the present to the discretion of the several editors, and that it be suggested to the committee that it limit its lists largely to plant literature.

Adjournment taken at three o'clock.

J. R. Schramm,

Temporary Secretary of the Board of Control of Bot. Absts.

SPECIAL ARTICLES

NON-SPECIFIC PROTEIN ANTIGENS PREPARED FROM SHATTERED HEMO-PROTEINS

For some time past I have been in quest of new methods to aid in combating various infections. I have tried out inhalations of several gases, hypodermic and intravenous injections of several salts and bases and acids, with practical negative results. However, recently I have obtained some very promising results while working upon the following hypothesis: In the blood and the blood-forming organs one may find the various compounds from which the building stones from which the various anti-bodies are formed during the process of active immunity to infection. Therefore the blood, or blood-forming organs may be the best material in which to find chemical compounds which may be isolated and used artificially to help the body resist infection. The blood in all probability contains the compounds which, when broken down to just the proper state of division, would yield a large number of proteins of relatively small molecular weight, which might act as antigens when introduced into the blood stream. The number and variety of these shattered products of blood digestion are doubtless very great, and some of them might well do the work of an antigen for almost any infection. In short, if the blood were properly digested and the various fragments of the digested blood tried out, it might be possible to find compounds which would not act harmfully in any way but would act as antigens in a great variety of infections.

In order to shatter the protein of the blood without destroying the particles it seemed best to employ no strong acids nor strong alkalis, nor any alcohol; but instead to use natural digestive enzymes. As a preliminary experiment I used Witte's peptone as a source for obtaining these shattered proteins. This worked very well, for Witte's peptone, being made from peptic digestion of blood fibrin proved to be very rich in these protein bodies. After trying Witte's peptone I prepared my own peptone and from that prepared my protein, from the fibrin of ox-blood by digestion with hydrochloric acid and pepsin. This method seems to be satisfactory. After the mixture of protein is prepared, it is separated into various parts such as primary and secondary proteoses and peptones. A mixture of secondary proteoses constitutes the protein we have used. The protein fractions were separated by precipitation with ammonium sulphate, the lower fractions being used, the other fractions rejected.

After long and careful testing on animals I have been using the protein in collaboration with clinical men on several different infections. Although the clinical side of the work has been going forward for over a year, in most diseases we are still far from a definite conclusion. However, Dr. Stanton and myself working on acute and chronic arthritis have found out that the protein is a very powerful remedy. It has given uniformly successful results on almost one hundred cases. Some of these were acute and others were chronic cases of years

standing. In collaboration with some of my pupils and other clinical men we have tested the protein in various streptococcus infections with good clinical results. More recently we have been extending the work to influenza, tuberculosis, pneumonia and all kinds of infections.

We do not yet know the exact compounds contained in the mixture of proteins which we have been using. There seems to be reason to believe that it is a rich mixture of many different individual proteins. We are making an effort to identify them as far as possible. It may be that the complexity of the mixture is the source of its power in so many different infections. We are also pursuing the inquiry as to the various possibilities of preparing other proteins from blood producing tissues and testing out on those infections which do not yield to the present protein.

I hope soon to publish a more complete account of the chemical work concerned with this problem and also of the clinical results obtained.

CLYDE BROOKS
THE OHIO STATE UNIVERSITY

A BIO-CHEMICAL THEORY OF THE ORIGIN OF INDIANAITE

INDIANAITE is the name applied to a variety of halloysite (Dana) by E. T. Cox.[1] It is a white mineral of porcelain-like appearance occurring in Indiana in beds varying in thickness from a few inches to eleven feet in rocks of the Mississippian and Pennsylvanian groups. Leo Lesquereux suggested that it had been formed by the burning out of a bed of coal.[2] Cox[3] advanced the theory that the Indianaite had been formed by the weathering and dissolution of a bed of limestone.

From studies in the field and laboratory the writer is convinced that the origin is due to bio-chemical action. Briefly stated the process is as follows: Shales containing pyrite are weathered and sulphuric acid is produced. The sulphuric acid attacks the clay forming aluminum sulphate. Sulphur bacteria absorb the soluble alum and rob it of its sulphur, secreting the aluminium in the form of a hydrated aluminium silicate which by a partial dehydration is rendered insoluble thus forming Indianaite. The writer has isolated the bacteria and finds them to be similar in appearance to *Beggiatoa alba*. That these microorganisms are influential in the origin of the Indianaite the writer believes he has demonstrated by experiments in the laboratory.

WILLIAM N. LOGAN
INDIANA UNIVERSITY

1 See 6th Ann. Rept. Geol. Sur. Indiana, p. 15.

2 See Rept. of a Geol. Reconn. of Indiana, 1862, p. 320.

3 *Loc. cit.*

THE AMERICAN PHYSICAL SOCIETY

THE ninety-fifth meeting (the twentieth annual meeting) of the American Physical Society was held at Johns Hopkins University, in Baltimore, Maryland, on December 27 and 28, 1918, in affiliation with Section B—Physics, of the American Association for the Advancement of Science. Professor Bumstead is now serving as scientific attaché to the American Embassy in London and his resignation as president of the society was accepted by the council on November 30, 1918. The vice-president, J. S. Ames, thus became acting-president, and he presided at the several sessions of the society and the council. The maximum attendance at the technical meetings was about one hundred, while eighty-eight members and visitors were present at the time of the business session.

On the afternoon of December 27 there were two sessions under the auspices of Section B, the presiding officer being the vice-president and chairman of the section, Major G. F. Hull. At 2 o'clock, P.M., the retiring vice-president and chairman, W. J. Humphreys, gave an address on "Some recent contributions to the physics of the air." At five o'clock, P.M., Dr. George E. Hale gave an address before the entire association on "The National Research Council."

The annual business meeting was held at eleven o'clock, A.M., on December 28, 1918. The revised form of the constitution and by-laws was unanimously adopted by letter ballot. The amendments do not alter the intent or purpose of the constitution in the old form, except in one respect: the managing editor is made a member, *ex-officio*, of the council. The amended constitution will be published in the next printed list of members.

The following officers were elected for the year 1919: