year adapted to war conditions. Announcement and further information can be obtained by addressing C. B. Davenport, Cold Spring Harbor, New York.

THE meeting of the British Association, which it was hoped would be held in Cardiff this year, has been cancelled. The local committee has reluctantly decided that satisfactory arrangements could not be made to ensure success for the meeting, and has sent a resolution to that effect to the council of the association. The council has accepted this view, so that for two years in succession the annual assembly of workers in all departments of science will not take place. Sir Arthur Evans has consented to occupy the office of president for another year, and there will be a statutory meeting in London on July 5 to receive reports of committees and transact other business, but otherwise the corporate life of the association will continue in a state of suspended animation, though there never has been a more favorable time than now to make the nation realize the debt it owes to science for the successful conduct of the war and the need for unceasing scientific activity to prepare for the industrial struggle which the future must bring.

UNIVERSITY AND EDUCATIONAL NEWS

SIR WILLIAM SCHLICH, F.R.S., professor of forestry in Oxford University, has received £500 from a donor who wishes to remain anonymous, to be added to the fund for the permanent endowment of the professorship of forestry. With the sums already contributed, the capital of the fund now amounts to over £6,300, and the annual income from all sources to about £300 a year, making about half of what is required.

A COMMITTEE, of which Sir William Osler is chairman, met in Cardiff recently to prepare a scheme for the Mansel-Talbot chair of preventive medicine in the University of Wales endowed by Miss Talbot. When the scheme had been approved the election of a professor will be proceeded with.

PRESIDENT BENJAMIN IDE WHEELER, of the University of California, has again asked for an increase in salaries for members of the California faculty. A year ago men of the grade of instructor and assistant professor received an increase of ten per cent.

JULIAN L. COOLIDGE, assistant professor of mathematics at Harvard University, has been advanced to a full professorship.

AT the Pennsylvania State College, E. H. Dusham has been promoted to be professor of entomology; M. D. Leonard, instructor in entomology at Cornell University, has been appointed instructor in entomology extension and R. C. Walton, of the Ohio Experiment Station, instructor in plant pathology.

DR. KIRTLEY F. MATHER, professor of paleontology at Queen's University, Kingston, Canada, is acting professor of geology and geography at Denison University, Granville, Ohio, for the spring term.

DISCUSSION AND CORRESPONDENCE

THE EXISTENCE OF LECITHIN

SOME eight years ago and again very recently, Barbieri[1] has reported results of experiments which he claims proves the non-existence of lecithin. His arguments are the following:

> The fatty matter of egg yolk can be separated in a state of purity by the aid of neutral solvents. The nitrogen-containing bodies can be removed by simple dialysis or by repeated washing with distilled water in the presence of a little alcohol. The fat yields on hydrolysis nothing but glycerol and fatty acids. Glycerolphosphoric acid can not be obtained by treating the egg yolk with a neutral solvent. It appears only after hydrolysis. The phosphorus occurs only in the form of metallic (potassium, sodium, calcium or magnesium) salts of phosphoric acid and is entirely dialyzable. Egg yolk contains no trace of choline, the supposed biological choline being a product of either the degradation of the ovochromin or of putrefaction.

From these results it would appear that the compound ordinarily called lecithin is a mixture of fats, phosphates and dialyzable nitro-

[1] Barbieri, N. A., *Comp. rend.*, 1910, 151, 405; *Gaz.*, 1917, 47, 1–13; *J. Chem. Soc.*, 112, I., 238.

genous substances. Such a mixture should be capable of some separation by ordinary chemical means. Any method of rigorous purification, such as that employed in the purification of lipoids, would certainly effect some change in the composition of this mixture.

Without criticizing the arguments of Barbieri, some of which (*e. g.*, the statement that glycerolphosphoric acid may be formed during the process of hydrolysis, from the glycerol of the fat and dilute phosphoric acid) certainly are open to criticism, we offer the following argument for the existence of lecithin.

The work of earlier workers seems to be sufficient to show that lecithin is a chemical substance, even though the analyses of the products from various sources (brains, heart, liver, egg) did not agree very well. But if any doubt existed as regards the existence of lecithin, it would seem that the recent work of Levene and West[2] proves that such an idea is not tenable. Not only has lecithin, as such, been isolated from the above-mentioned sources, but derivatives have been prepared and subjected to rigorous purification, always with the same result. The following facts may be mentioned.

Lecithin, from various sources, such as the primary alcoholic extract, the primary ethereal extract, the secondary alcoholic extract, or the fraction dissolved in egg oil, has been precipitated as the cadmium chloride salt, giving a product of very similar composition. This salt has been purified by crystallization from two parts ethyl acetate and one part 80 per cent. ethyl alcohol, or by extraction with ether and subsequent crystallization, with little or no change in its composition. Furthermore, the salt may be decomposed with ammonium carbonate (Bergell) and the free lecithin again converted into its cadmium chloride salt; this salt will still have the same elementary composition.

A more convincing proof of the chemical individuality of lecithin is found in the preparation of hydro-lecithin. Lecithin (especially those samples which have been washed with water and acetone, according to the directions of MacLean) is very readily reduced with hydrogen (using Paal's method, with colloidal palladium as the catalyzer) and yields a crystalline tetrahydrolecithin, which may be obtained in an analytically pure form by crystallization from methyl ethyl ketone, and once pure, may be recrystallized repeatedly, without change in composition, from such solvents as methyl ethyl ketone, alcohol, or ethyl acetate. If, as Barbieri claims, fats are present, they would remain in the methyl ethyl ketone liquors; our experience in the purification of cerebrosides indicates that this is one of the best solvents for the removal of fat.

We have also combined these two processes. Lecithin has been precipitated from alcoholic solution by cadmium chloride, the salt decomposed with ammonium carbonate, the free lecithin washed with water and acetone, and then reduced with hydrogen. In this way Levene and West have obtained a chemically pure tetrahydrolecithin.

It is hard to believe that a mixture of choline, glycerides, and phosphates, such as Barbieri claims for lecithin, can be subjected to the above methods of treatment and give, in every instance, a body with identical chemical composition. Rather, I believe, it is easier to accept the chemical individuality of lecithin.

Clarence J. West

Washington, D. C.

[2] Levene, P. A., and West, C. J., *J. Biol. Chem.*, 1918, 33, 111; 34 (in press).

DESMOGNATHUS FUSCUS [SIC]

Full many a biologist, in his use of the classics, has encountered two special stumbling-blocks; the fourth Latin declension, and the Greek noun whose gender does not fit its form.

Concerning the first of these, so many anatomical nouns, among them certain of the most commonly used ones, belong to this weak form of declension that the student of anatomy may almost consider the fourth the commonest one for masculines in *-us*. He meets with *ductus, arcus, fetus, plexus,* and *nexus;* with *processus, recessus, meatus, tractus,* and *sinus,* while the five senses, with *sensus* itself, are