PROCEEDINGS OF THE AMERICAN CHEMICAL SOCIETY

Room 1 *University Building, N. Y., regular meeting June* 3*d*, 1882.

Dr. A. R. Leeds in the chair.

The minutes of the previous meeting were read, and after some corrections, were approved.

The minutes of the meeting of the Board of Directors on May 9, 1882, were then read.

The following gentlemen were then unanimously elected as regular members:

G. E. Bailey, proposed by M. Benjamin, W. Rupp and A. H. Elliott; Dr. Wm. Strattford, of the College of the city of New York, proposed by Chas. A. Doremus, Jas. H. Stebbins Jr., and A. R. Leeds; H. Edward Stockbridge, proposed by E. H. Goessmann, H. Endemann, and Jas. H. Stebbins Jr.; J. E. Mallett, Hoffman House, N. Y., proposed by C. A. Doremus, Jas. H. Stebbins Jr. and A. R. Leeds.

As associate member:

Y. Polledo, School of Mines, Columbia College, proposed by T. O'C. Sloane, Jas. H. Stebbins Jr. and A. H. Elliott.

The Librarian reported that Nos. 1 to 9 of the *Chemiker Zeitung*, and also some numbers of the *Berichte der Deutschen Chem. Ges.* were missing, and had been improperly removed from the library.

After which the following paper was read: On "Acetate of Lime, its manufacture and analysis," by Messrs. C. M. Stillwell and T. S. Gladding.

Dr. Waller remarked that the presence of acetic acid interferes decidedly with the precipitation of phosphoric acid by molybdate solution.

Mr. Stillwell replied that he overcame this difficulty by using large quantities of ammonium nitrate.

Dr. Grothe asked if the authors had noticed the presence of acetone in the products of the decomposition of acetate of lime by heat.

Mr. Stillwell said he had not noticed it particularly, since his attention had been confined simply to the loss of acetic acid.

Dr. Squibb remarked that it was not necessary to carbonize the wood, but that all the acetic acid could be obtained at a much lower temperature, (about 160 to 200° C.) and the products then contain no acetone.

For the analysis of sodium acetate he uses a glass retort covered with copper gauze, and heats it on one side to prevent frothing and bumping. He uses 10 gms. of the acetate with 20 c.c. of water, and 10 c.c. sulphuric acid; after distilling off 10 to 15 c.c. of liquid, the distillation is interrupted,—about 20 c.c. of water are added to the retort, and 10–15 c.c. of liquid again distilled over. This is repeated a third time when all the acetic acid will have come over, without trouble from frothing or bumping during distillation.

Dr. Squibb further remarked that he used in his factory, retorts 20 feet long, 2 feet wide, and 10 feet deep, holding 2½ cords of wood, and heats them in a hot air bath. During the first twelve hours, only water is given off. In about 24 hours the acetic acid begins to distill over, the process being completed in 6 to 7 days for each retort.

Seasoned oak is preferred, and any admixture of softer woods diminishes the yield of acetic acid. Chestnut is notable in this respect.

Throughout the active heating, but more copiously toward the end, a gas, colorless and odorless (and, so far as tested, uninflammable), comes over, having anæsthetic properties. This gas adheres to the wood, after the charge is cooled and drawn, and seems to be a reason why small vermin will not remain near it. If the charge is heated too long, smoke appears at the exit pipe and carbonization of the wood begins at the centre of the top of the charge, extending in V-shape toward the bottom. When once started this carbonization proceeds spontaneously without further application of heat. Indeed it is sometimes found difficult to check it, even by the liberal application of cold water to the outside of the retort.

In the course of the operation, when properly managed the charge shrinks one third of its volume. 4000 lbs. of wood yield about 2800 lbs. of residue. The residue retains all the appearances of the wood before distillation, only that it becomes walnut-colored and it has the same elementary composition as that of kiln-dried wood. It is brittle and not well adapted to construction, but forms a most excellent fuel for many purposes, especially for kindling anthracite coal. The distillate is neutralized with soda ash and distilled to about one-fortieth its volume. The first product is crude wood spirit. This is redistilled, and gives rectified wood spirit, and lastly wood oils, which contain large quantities of furfurol and no acetone. The wood oils are separated by passing the last portions of distillate into water. The rectified wood spirit contains about 80 % of methyl acetate, and when saponified gives a very pure methyl alcohol.

One cord of well-seasoned wood will afford 1200 to 1400 lbs. of liquid products. A cord of oak yields 60 to 70 lbs.of glacial acetic acid.

Dr. Squibb further remarked that there was no process commercially practicable for obtaining pure acetic acid from pyroligneous acid, or acetate of lime, but only from acetate of soda. Mr. Parker remarked that he had tried a process for making acetic acid by heating wood fibre with steam, under a pressure of 60 lbs. at 275° C.and confirmed Dr. Squibb's observations on the deterioration of the woody fibre, and also the impracticability of making pure acetic acid from pyroligneous acid.

Dr. Grothe remarked that in distilling acetone with bleaching powder, he had obtained chloroform simultaneously with calcium acetate.

Dr. Doremus brought up the question of giving reprints of papers to members. After some discussion Mr. Casamajor moved that "those members who desire reprints of their papers shall notify the committee on papers and publication, who may make arrangements to have them supplied at the expense of the authors." Carried.

After which the society adjourned to September 1st, 1882.

ARTHUR H. ELLIOTT,
Rec. Sec. pro tem.

XVI. ACETATE OF LIME—ITS MANUFACTURE AND ANALYSIS.

BY STILLWELL & GLADDING.

Acetic acid and its compounds hold a very important place in the arts and manufactures. They are extensively used in many branches of industry, as, calico-printing and dyeing, in the treatment of gums, in the manufacture of paints and varnishes, etc. Acetic acid is well known in the form of vinegar.

It may be formed in three ways: (*a*) by acetous fermentation, chiefly used for the making of vinegar; (*b*) by destructive distilla-