HAYWARD SPEAKS. (Continued from Page 1, Col. 2.)

variations; they contain machines for special purposes, machinery for testing the product at each stage of the process, from the raw material to the finished, marketable article.

Very few of these laboratories, however, are equipped for research work. The men employed are not of great intelligence, and are trained to be very narrow, due to the fact that they are constantly working on the one material manufactured by that particular firm.

Another class of testing laboratories is a combination of the first two. These are equipped for both practical tests on materials and for research work. In these much valuable data is obtained and made use of in the manufacturing processes.

The government testing laboratories form another distinct group, being arranged for special work, such as the testing of different alloys, metals, bricks, cement, etc. As a rule, they are the most highly equipped of all, and are therefore well adapted for research work. But the trouble with the government testing laboratories is their extreme slowness, occasioned by the great amount of red tape which is, nevertheless, very regrettable, and accomplishes much.

The fourth group of testing laboratories are those found in technical schools. The lecturer said that they are probably the best equipped of all through which the students and experiences here at the Institute to make tests just at the entrance of the technical school testing laboratory actual apparatus for testing of different alloys, metals, bricks, cement, etc. As a rule, they are the most highly equipped of all, and are therefore well adapted for research work. But the trouble with the government testing laboratories is their extreme slowness, occasioned by the great amount of red tape which is, nevertheless, very regrettable, and accomplishes much.

After discussing many other points of interest to the practical engineer, Professor Hayward showed the audience by means of lantern slides a few of the tests performed here at Tech and described them in detail. The slides were very interesting and they well demonstrated the speaker's words, the fact that the work which he had done was an important one, and that the men being trained were able to do the work as well as the best foreign workmen.

CHEMICAL SOCIETY. (Continued from Page 3.)

to solve the practical difficulties that have arisen in the application of this process, and so he has a first hand knowledge of its principles.

He first read a paper on "The Development of the Cotrell Electric Precipitation Process," showing how the phenomenon of gas used in the case of dry particles suspended in a gas could be explained by the logical reasoning from the fundamental laws of energy relations, provided some simple as

solutions were made. Thus he demonstrates that the fall of very minute particles was greatly affected by their relative sizes, the smaller the particles the slower being their velocity of fall.

He showed that if the particles were suspended in a gas that was in motion through a pipe, and if we assume that the particles lag behind the gas stream ever so slightly (as is possible due to their greater density and inertia), that the falling of these particles would be even slower than were the gas at rest. Thus it is impossible to remove the finest particles of suspended matter in motion by the action of gravity alone.

That since the problem of finding a force sufficiently powerful to cause a settling out at a speed far greater than any gravity was able to accomplish, he mentioned the fact that centrifugal separation encountered the same difficulty that gravity separation did, namely, that the forces acting on the particles diminished rapidly with the size. But separation by means of silent electric discharge overcomes this difficulty, for the regulation of very small particles is great enough to cause them to settle out quickly on the metal pipe through which the cloud of dust is being blown.

After explaining why the electric discharge is able to make the particles fly to the discharging electrode, he went on to demonstrate very much the actual apparatus worked. He took a grounded iron pipe, about eight inches in diameter, and six feet long. A wire under a potential of many thousand volts connected an axial position in the tube. The gas with the suspended particles (ammonium chloride) enters near one end, and when the discharge is passed, the cloud of arsenic fails to enter the tube. Owing to the fact that a direct current under a potential of only 18,000 volts was available last night, the complete precipitation of the smoke was impossible, but to make up for that he showed by some slides that excellent results have been obtained in practice. In a sulphuric and lead smelting plant it was possible to completely condense and save all the extremely objectionable sulphuric acid mist that had escaped by other methods. In a smelter at the West it prevents the escape of a ton and a half of arsine daily.

After discussing the various apparatus used in his experiments, he showed the difference between the direct and alternating currents and also between the low and high potentials that he has worked with.

After the close of Professor Hayward's talk, which was greatly enjoyed and appreciated by both the members and guests, there was a question period.

Theodore Metcalf Company

We wish you a "Merry Xmas."

Metcalf's Sachet Powder

makes an exquisite present for

Mother, Sister or Sweetheart

Tradition warms a snow-white beard, and has the wisdom of experience.

The pipe is a college tradition. Fill yours with

VELVET

and you will endorse the dictum of your predecessors.

VELVET is the smoothest tobacco you will ever smoke. And it is rich.

VELVET is mild.

VELVET is satisfying—yet withal inexpensive.

Lippitt Ayers Tobacco Co.

We wish you a "Merry Xmas."

Metcalf's Sachet Powder

makes an exquisite present for

Mother, Sister or Sweetheart

Tradition warms a snow-white beard, and has the wisdom of experience.

The pipe is a college tradition. Fill yours with

VELVET

and you will endorse the dictum of your predecessors.

VELVET is the smoothest tobacco you will ever smoke. And it is rich.

VELVET is mild.

VELVET is satisfying—yet withal inexpensive.

Lippitt Ayers Tobacco Co.