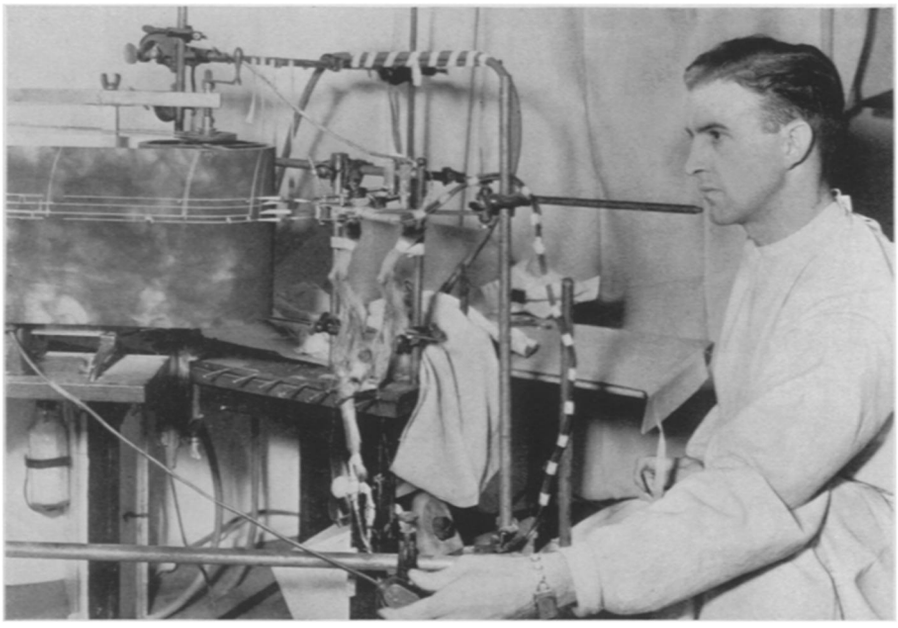

SPINAL LEARNING

With this elaborate apparatus, Dr. P. S. Shurrager (who holds the switch) and Dr. E. A. Culler of the University of Illinois have demonstrated to the A.A.A.S. that the higher centers of the brain are not essential to learning. So long as a dog has the use of three or four inches of his spine, he can learn without use of brain or the senses of vision, hearing, smell or taste. An animal whose nervous system was severed under anesthetic at the neck and in the middle of the back was kept breathing in a respirator and was able to learn in each part separately.

CHEMISTRY

Vitamin B_1 May be Fundamental Component in Evolution

Chemical Society Hears of Experiments With Thiamin Which May Be Synthesized in Bacteria and Plants

VITAMIN B_1, whose lack in human diet causes the dread disease beriberi found mostly in Oriental countries, appears to have a fundamental place in the chemical chain which brings about the process of evolution in both plants and animals. Vitamin B_1 is now being prepared synthetically in the laboratory and is now known as thiamin.

The basic role of thiamin was traced at the opening session of the 7th National Organic Symposium of the American Chemical Society in Richmond, Va. Dr. R. R. Williams, chemist of the Bell Telephone Laboratories, New York City, discussed the nature of thiamin. Dr. Williams isolated vitamin B_1 and by studying its structure has been able to make it synthetically.

As vitamin B_1 or thiamin became available in quantities sufficient to supply other workers in many fields it became apparent that the chemical was a fundamental substance, not only in the welfare of man, but also in all varieties of living matter, including higher animals, in insects, bacteria, fungi and higher plants.

Many bacteria and plants, declared Dr. Williams, seem able to synthesize within their bodies this essential vitamin in quite the same way that man is able to make his own adrenalin and other hormones. Plants, however, make the vitamin as part of their normal physiological processes. Man does not.

"Evidently the processes for which the vitamin is used by plants and microorganisms are closely akin to those which employ thiamin in the animal body," said Dr. Williams. "Thiamin, therefore, appears to have to do with a very primitive and elemental function of living matter, presumably devised by nature during early stages of the evolutionary process.

"Plants and microorganisms are somewhat more catholic in their tastes than animals and can make use of a wider variety of analogs and derivatives of thiamin."

Thiamin, Dr. Williams also explained, can act as a coenzyme in the form of its pyrophosphate compound. A coenzyme, he explained, is a component part of the several natural catalysts in the body known as enzymes. The enzymes which involve thiamin have to do with the utilization of starches and sugars for the production of energy or the creation, in the body, of the necessary components of the tissues.

It is this last function of thiamin which explains the diversified nature of the symptoms caused by its absence. The reactions involving thiamin occur in all the tissues of the body, no matter how specialized their function may be, and so a deficiency of the vitamin in the food may impair any one of a number of bodily functions depending upon which tissue or organ is most affected.

New Drying Agent

Better stainless steels, candy, drugs, leather, paper, glass and varnishes are resulting from a new water absorbent now being used by industry. The new absorbent is activated alumina, a granular, white inert solid which can be completely rejuvenated with ease for further use merely by heating. While small scale units for the home have not yet been made available it is possible that the lead of industry may be followed by home use with increased summer comfort.

Activated alumina was described by R. B. Derr of the Aluminum Company of America before the 4th Annual Chemical Engineering Symposium of the American Chemical Society, meeting in Philadelphia.

The drying absorbent is used by industry where almost complete removal of moisture is vital, or a constant moisture content is required, said Mr. Derr.

One hundred per cent. dehumidification is possible, he added, until the activated alumina absorbed from 12 to 14 per cent. of its own weight of water. Large commercial units of activated alumina are now in operation which can remove 15,000 pounds of water daily from the atmosphere.