Stuart[1] and the quinine sulfate method of Williams.[2] Recently, Cook and Carroll[3] have reported the successful use of pyridine solutions.

We have been studying the concentration of vitamin B_1 for the last two years and have made an extensive study of the extraction from the adsorbate. In general, the published methods have extracted the vitamin, but in most cases the yields were not high. The quinine sulfate method of Williams probably gave the best yields. Early in our work we observed that pyridine solutions extracted some vitamin from the adsorbate, but the yields were far from satisfactory. In marked contrast, we found that the acid salts, such as the hydrochloride of pyridine, quinoline, aniline and certain other nitrogen bases gave very high yields of vitamin; yields of 90 per cent. or better were ordinarily obtained. Even solutions of ammonium chloride gave better yields of vitamin than solutions of either ammonia or hydrochloric acid.

Aqueous, aqueous alcoholic or alcoholic solutions of some of the acid salts of these bases have been extensively used in our studies. A more detailed description of the procedure of extraction will be contained in a later publication.

Our studies appear to show that the acid salts of certain nitrogen bases have the property of freeing the vitamin B_1 from the fuller's earth or Lloyd's reagent. These salt solutions have a much more marked effect than either the base or the acid alone. In fact, our evidence indicates that a part at least of the extractive power of the nitrogen base or hydrochloric acid is due to the formation of acid salts with either the acid or the nitrogen bases adsorbed with the vitamin on the fuller's earth.

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VITAMIN C IN AN ESTRIN PRODUCING OVARIAN TUMOR

IT has been already indicated by the authors[1] that vitamin C seems to be related to the formation of progesterone in the corpus luteum, but not to the production of estrin in the ovary. Weight is added to this latter idea by an examination of a rare estrin-producing ovarian tumor which we were fortunate enough to obtain from an operation upon a 19-year-old girl.

The pathological and clinical aspects of this case are to be reported in detail by Drs. G. Y. Rusk, R. Rypins and A. Palmer. Hormone studies carried out by Dr. Allan Palmer[2] showed that the tumor contained the estrogenic equivalent of 11.7 γ theelin per gm desiccated tissue, and 50.0 γ per liter cyst fluid. The daily excretion of estrogenic substance in the urine was about 66.0 γ per 24 hours before operation, and fell to normal limits after removal of the tumor. All estimations for gonadotropic hormones were negative.

The vitamin C concentration was determined by titration of a 2 per cent. metaphosphoric acid extract of the tissue with 2, 6-dichlorophenol-indophenol, and was found to be 0.20 mg per gm fresh tissue. Using a technique previously employed,[3] it was estimated that fibrous tissue composed 18 per cent. of the weight of the tumor; hence if the reasonable assumption is made that practically all the vitamin C is contained in the parenchymal cells, it may be calculated that there is 0.24 mg of vitamin C per gm of parenchymatous tissue.

From the cell-counting procedure[4] the number of parenchymal cells per mg was found to be 712×10^3. It follows, then, that there is $\frac{0.24}{712 \times 10^3}$ or $0.34 \times 10^{-6}\gamma$ vitamin C per cell.

Up to the time of operation the patient was on a high vitamin C diet.

The comparatively low concentration of vitamin C in this tissue, which has been generating estrin in large amounts, would emphasize the previous suggestion that vitamin C is unrelated to estrin formation in the ovary.

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AN ARTHROPOD VECTOR FOR EQUINE ENCEPHALOMYELITIS, WESTERN STRAIN[1]

IN a forthcoming report[2] we have described experiments which suggest that the "gopher," *Citellus richardsonii* (Sabine), may serve in nature as a resrvoir host for the virus of equine encephalomyelitis, Western strain. We record this supplementary note at the present time to permit workers in the field to use

[1] E. H. Stuart, R. J. Block and G. R. Cowgill, *Jour. Biol. Chem.*, 105: 463, 1934.
[2] R. R. Williams, R. E. Waterman and J. C. Keresztesy, *Jour. Am. Chem. Soc.*, 56: 1187, 1934.
[3] C. A. Cook and R. H. Carroll, *Ind. and Eng. Chem.*, 28: 741, 1936.
[1] G. R. Biskind and D. Glick, *Jour. Biol. Chem.*, 113: 27, 1936.

[2] Hormone studies were made possible by a grant from the Christine Breon Research Fund, the Department of Obstetrics and Gynecology of the University of California Medical School.
[3] D. Glick and G. R. Biskind, *Jour. Biol. Chem.*, 114: 1, 1936.
[4] D. Glick and G. R. Biskind, *Jour. Biol. Chem.*, 110: 1, 1935.

[1] From the Department of Bacteriology, University of Rochester, School of Medicine and Dentistry, Rochester, New York.
[2] Jerome T. Syverton and George Packer Berry. *Proc. Soc. Exp. Biol. and Med.* In press.

the remaining summer months for the collection of other potential hosts and natural vectors.

It has been suggested that arachnids may serve as vectors in the dissemination of equine encephalomyelitis[2]. This suggestion has been substantiated experimentally. The tick used was *Dermacentor andersoni* (Stiles)[3]. A 250 gram guinea pig was inoculated intracerebrally with 0.12 cc. of brain tissue-equine encephalomyelitis virus suspension. Eleven nymphs were immediately placed on the guinea pig. Engorgement was completed in 48 hours. Thirty-four days later the resultant adult ticks, six females and five males, were placed on a "gopher." The "gopher" died five days later. Brain tissue suspensions, unfiltered, and as Berkefeld V and Berkefeld N filtrates, resulted in equine encephalomyelitis on passage to guinea pigs.

These preliminary observations indicate that ticks of the genus *Dermacentor* may act as vectors of equine encephalomyelitis, Western strain. As far as we are aware, this is the first time that a tick of the genus *Dermacentor* has been implicated in the transmission of a filterable virus disease. Further studies which include other ticks are now in progress. It is significant that the geographical distribution of the disease corresponds to that of this vector and of other ticks belonging to the same genus. The susceptibility to equine encephalomyelitis of the "gopher," *Citellus richardsonii* (Sabine), one member of a large group of closely related native rodents, many of them with a geographical distribution similar to that of the disease and the tick vector, has been reported.[2]

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE SPEED CONTROL FOR SMALL D. C. MOTORS

THE device described here furnishes a simple and flexible means of securing, on short notice and over a wide range of values, steady rotational speeds applicable to light loads. It has been employed for stirring baths, driving sector and siren disks, for stroboscopic determinations, producing and studying vibrations and waves, for lecture demonstrations and for a variety of uses such that it has come to be a tool for both research and instruction. The design is offered, therefore, in the hope that workers in various types of laboratory will be interested. In principle it makes use of well-known facts and, in construction, of parts that are cheap and easily obtained. The particular combination, as far as the author is aware, is not generally known. It has been given only a brief description in a local journal[1] and a demonstration before a public audience.[2]

Two units enter into its assembly: a D. C. shunt motor and a control board. The principle utilized consists in reducing the potential on the armature terminals without changing that on the field magnet when speeds slower than the designed normal speed are desired, while for speeds above normal the field magnet is weakened, while the potential on the armature is kept at full value. A potential divider is used to accomplish this. Series resistances could be employed to secure this type of regulation, but the potential divider has two advantages: first, its resistance is not critical; second, at the lower speeds, the power output is greater. Thus, at 1/3 normal speed for a certain ⅓ H. P. motor, the output with the potential divider was 10 times that with series control.

Figure 1 shows the wiring diagram for the control

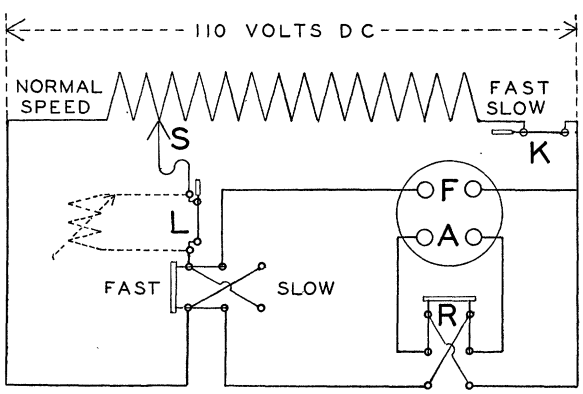

FIG. 1. Wiring diagram for control board.

board. The terminals of the field and armature are plugged in at F and A, respectively, using a standard receptacle to fit the base of an outworn radio tube with connecting flexible cable (three to four feet long for general purposes) of four stranded leads between motor and plug. The control board in turn is plugged through a lamp cord to the mains whose potential is applied across the potential divider as indicated. Of the two double pole double throw switches, R is for reversing the direction of rotation and the other, or "fast-slow" switch, is for running above or below normal, respectively. It will be observed that as the

[3] We are much indebted to Dr. C. B. Philip, U. S. Public Health Service, Hamilton, Montana, through whose courtesy we were able to obtain ticks.

[1] *University of Virginia Journal of Engineering*, 5: 77, 1924.

[2] *Proceedings*, Virginia Academy of Science, 1924–5, page 8.