

of lungs revealed the presence of *V. pneumonicus* in the infected animals only, the controls being completely free. It has thus been proved that the lung worm, *V. pneumonicus* utilises the land snail, *Macrochlamys (Euaustenia) cassida*, as an intermediate host for completion of its life-cycle.

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### ON THE PATHOGENICITY OF *SETARIA CERVI* (RUD. 1819) IN BUFFALOES

THE worm is generally considered non-pathogenic; but there are a few records of its accidental pathogenicity in literature. Purvis<sup>2</sup> states to have seen the worm associated with pathological lesions on four occasions: (1) with a patch of hæmorrhagic inflammation on the visceral peritoneum, about five inches in diameter; this coincided with the presence of some six to eight worms; (2 & 3) with fibrinous peritoneal exudate; and (4) with calcified material of similar appearance. Poisson and Buck<sup>1</sup> point out that while *S. cervi* usually occurs in very large numbers in the peritoneum and appears not to have any pathological effect, it may occur in other organs such as lymphatic tissues, spleen and right heart, where the parasite may be pathological.

The author's material consists of small intestine with a parasite embedded in each; these having been regularly collected from twenty of the one year-old buffalo calves. On the average, six such pieces per animal could be collected.

The material can be grouped into:—

(1) The parasite lying between the muscular and serous membranes.

(2) The parasite being coiled at one end, the other half being straight under the visceral peritoneum.

(3) The parasite with about anterior one-fourth out in the peritoneal cavity and the rest coiled in a loop under the serosa, the parasite being probably in a state of emergence.

(4) The parasite lying in a degenerated condition in the same site as mentioned for the above three categories.

In all these pieces in the living state, the parasites were throughout surrounded by a reddish zone. The pieces were fixed in Buion fluid and then transferred to 50 per cent. alcohol after 24 hours. After keeping them in 50 per cent. alcohol for seven days, serosa from one half of a piece was stripped off with the parasite embedded in it and was cleared in creosote. The other half of the piece was used for section cutting. The part cleared with creosote presented the anterior part of the parasite in its full form. This was surrounded by a stained zone of cells corresponding to the 'red zone' seen with the naked eye. Fibrous tissue which had remained unstained surrounded the stained zone. In the micro-photograph the parasite is surrounded by endothelial cells and there is slight congestion.

The section on the whole gives an appearance of a nodule.



Transverse Section of Serosa with *S. cervi* embedded in it × 450

The regular appearance of the parasites in the sites mentioned and the fact that they set up a reaction in these sites, shows that the parasite is definitely pathogenic. The peculiarity of their disposition, i.e., lying spirally under the serosa, in a state of emergence and a degenerate appearance with the half of the parasite coiled at one end and the other half straight as though not having been successful in emerging, shows that the parasites pass sometime in these tissues before final emergence.

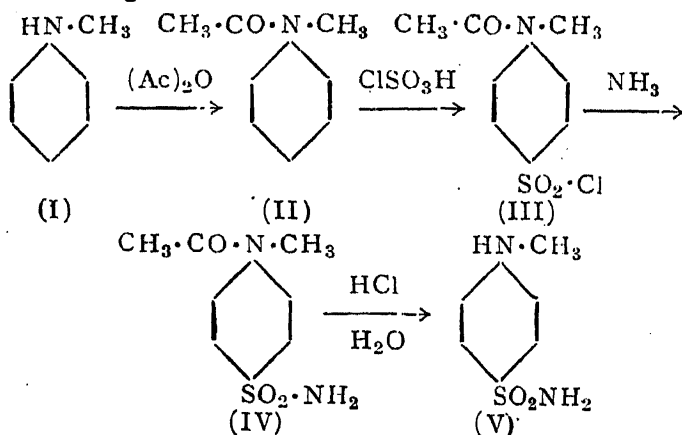
Military Dehydrated  
Meat Factory, Agra,  
February 6, 1945.

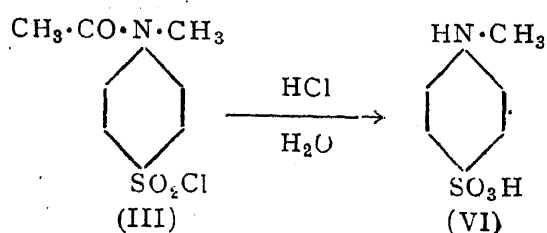
M. M. SARWAR.

1. Poisson, H., and Buck, G., *Bull. de la. Soci. de Pathologia Exotique*, 1936, 29, 933-34. 2. Purvis, G. B., *The Veterinary Record*, May 9th, 1931.

### A NEW SULPHONAMIDE

ON referring to literature neither 4-N-methyl-amino benzene sulphonamide nor its intermediates were described. Therefore the total synthesis of 4-N-methyl-amino benzene sulphonamide was undertaken according to the following scheme.





*N*-methyl-acetanilide (II).—20 Gms. methyl-aniline (I) (b.p. 192° C.) was reacted with equal weight of acetic anhydride. Much heat was generated. On cooling, the mixture was poured into an equal volume of water. Methyl-acetanilide did not crystallise even on keeping in the refrigerator for several days. The aqueous layer was decanted and a few c.c. of strong ammonia were put in it, when the whole crystallized in a mass. On recrystallization from benzene, it melted at 100° C. (yield theoretical).

4-*N*-methyl-acetamino benzene sulphon chloride (III).—The procedure for this preparation is a slight modification of the usual method. In a 200 c.c. beaker was placed 117 gms. (10 mols.) of chlorosulphonic acid. This was cooled to -5° C. and 14.9 gms. (1 mol.) of (II) was added in one hour. The temperature was maintained below 5° C. during the addition. The mixture was then heated for two hours at 60° C. and poured on a large quantity of crushed ice. Sulphon chloride precipitated in a yellowish mass, which settled down quickly. The acid water was decanted—the precipitate was taken up in chloroform, the solution was dried with anhydrous calcium chloride. On the removal of chloroform 24 gms. of the product were obtained (yield 50 per cent.). After several recrystallizations from benzene pure sample of (III) was obtained (m.p. 126° C.).

4-*N*-methyl-acetamino benzene sulphonamide (IV).—To 4.8 gms. of (III) contained in 50 c.c. Erlenmeyer flask, was added 50 c.c. of concentrated ammonia. The mixture was heated on a water-bath until a volume of 10 c.c. remained and then made neutral with

dilute acetic acid. A precipitate of (IV) was obtained weighing 4 gms. (90 per cent. yield). Several crystallizations from 66 per cent. alcohol gave a sample of (IV) (m.p. 155° C.).

4-*N*-methyl-amino benzene sulphonamide (V).—To a solution of 2.5 gms. of (IV) in 25 c.c., absolute ethyl alcohol and 20 c.c. of concentrated hydrochloric acid was added. The resulting solution was heated for 30 minutes until a volume of 10 c.c. remained. Addition of water gave a clear solution showing complete deacetylation. It was made ammoniacal and a precipitate weighing 2.1 gms. (yield 85 per cent.). Successive crystallization from dilute alcohol gave a purified sample (m.p. 166° C.).

4-*N*-methyl-amino benzene sulphonic acid (VI).—To 2 gms. of (III) in 100 c.c. Erlenmeyer flask, was added a solution of 25 c.c. hydrochloric acid and 25 c.c. water. A clear yellow solution resulted after refluxing for a few minutes. After a further heating of 20 minutes and cooling no crystals of insoluble hydrochloride separated. On further evaporation of the solution and cooling to 0° crystals were obtained, which on recrystallization from alcohol were obtained in a purified form and decomposed at 244° C.

#### SUMMARY

1. 4-*N*-methyl-amino benzene sulphonamide has been prepared according to the general procedure with some modifications.

2. The action of chlorosulphonic acid on methylacetanilide gave substitution in 4-position in accordance with general rule, which was confirmed by its sulphonic acid.

3. All the compounds (II), (III), (IV) and (V) are very soluble in all solvents and much caution is to be exercised in crystallizing them.

4. Contrary to expectation amide (V) was found to be a lower melting compound than (IV) which has a higher molecular weight.

Hyderabad (Dn.),  
February 5, 1945.

HABIB HASSAN.  
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## AGRICULTURAL RESEARCH IN U.S.S.R.

ACCORDING to current information, scientific workers at the Leningrad Institute for Plant Culture who were evacuated early in the war have now returned, and the restoration of the greenhouses, laboratories, and other equipment destroyed, is under way. The experimental station is situated three miles from Pavlovsk, near Leningrad, and had given major attention to the development of improved varieties of fruits. While many of the collections were removed to Germany and the remainder neglected, seeds sent to other parts of the Soviet Union have been found to give normal results. It was expected that the autumn of 1944 and the spring of 1945 would provide farm nurseries with 100,000 strawberry cuttings, 50,000 fruit trees, 60,000 currant bushes, and many other plants while, by next summer about 3,000,000 seedlings and cuttings from fruit trees and bushes will be ready. Extensive plans for scientific research are also being made.

Reorganization and expansion are also going on at the Moscow Botanic Gardens, where it is planned to enlarge the area from 250 to 750 acres. The work is organized under sections of plant evolution, experimental ecology, cultivated plants, dendrology, horticulture and floriculture.

The Academy of Sciences has established an experiment station in Northern Siberia, known as the Mountain Targa Station. Located in the Nkrivio Kliuch Valley near the city of Voroshilovussurisky, breeding and selection programs are under way looking toward the development of better crops for cold, short-season regions, the production of hardy fruit trees and bushes, and the adaptation of local wild species to food and medicinal purposes. New methods developed at the station are said to have brought about a potato production of about 12 tons per acre in large-scale fields.

—*Experimental Station Record*, 92, 160 (1945).