

headache, as Werther and Benario³¹ have already noted. They started in from one to four months after the injection, at a time when practically the last remnant of arsenic had been excreted, and these men considered that the cases were exclusively luetic in origin.

As to their true causation there is still some difference of opinion. Some believe they are due to a toxic action of the salvarsan on the nerves, while others think they have nothing to do with salvarsan. Again others believe that while they are of a luetic nature, yet the salvarsan, in its action on the nerves, has caused a *locus minoris resistentiae*. Still another group of observers, headed by Ehrlich himself, believes that they are due to the progressive germination of a few unkilld spirochetes. Neisser takes the ground that the salvarsan therapy has nothing to do with the "neurorecidives" except in this way—that in some persons, unfavorably influenced by the arsenic therapy, these nerve lesions come on earlier than they would otherwise. Benario has attempted to show that the same ill results were noted, and as frequently, after the use of mercury as after the beginning of salvarsan therapy. In concluding this consideration it seems evident that the "neurorecidive" or "neuro-recurrence" is of a luetic nature, but it is hardly to be doubted that the salvarsan plays an important rôle both as to time and character of its appearance.

ACCIDENTS CLASSIFIED

Accidents following the use of salvarsan may be classified as follows:

1. Those coming on very shortly after the injection with symptoms of an acute intoxication and necropsy findings of serous meningitis, hemorrhages, and frequently lesions of the kidneys and liver, lesions such as one finds in experimental arsenic poisoning.

2. Those coming on in from two to four days with symptoms of nerve paralyses, at times deafness, dizziness, poor hearing and even loss of consciousness, due to the Herxheimer reaction. It is explained by the killing of the spirochetes with consequent loosening of their toxins, and resultant edema and swelling of the parts affected, causing severe damage in such uncompressible tissues as the brain or nerves running through an osseous foramen.

3. Those coming on within from several weeks to months after the injection with symptoms of nerve paralysis and to be classed (1) as a "neuro-exacerbation" or "neurorechute," in which there is the lighting up of a hidden process already working or (2) as a neuro-recurrence "neurorecidive," in which there is a genuine starting up of a new lesion. Both these processes while luetic in character are associated with the arsenic preparations at least as to time and mode of their appearance.

CONCLUSIONS

I do not wish to convey the idea that the use of salvarsan is to be discouraged. On the contrary, I believe

31. Benario, J.: Neurorecidive nach Salvarsan und nach Quecksilberbehandlung, ein Beitrag zur Lehre von der Frühsyphilis des Gehirns, München, 1911.

that when the drug is properly used and by experienced persons it is a most valuable weapon against the *Spirochaeta pallida*. To insure against untoward results, however, one must exercise care as to the selection of cases and after ascertaining that no physical disqualification exists, one should further exercise care in not giving too large doses. From my experience, I would advise that treatment be begun with a small dose and gradually worked up by succeeding injections not to be given oftener than once a week. Great care should be taken as to the purity and sterility of the distilled water. The reaction of the patient should be carefully watched and, if very severe, further injections should be given with exceeding care. In cases of cephalic chancres one should institute salvarsan therapy with the greatest caution. If these precautions are taken, the result will be with rare exceptions most gratifying and, if the drug is used in conjunction with mercury, the result will be much quicker and surer than with either alone. Again, there are many obstinate cases that will react only to this combined line of treatment. As to the relative therapeutic value of the old and the new salvarsan I have been unable to detect any difference.

Finally, every physician having had accidents from the use of salvarsan should consider it his duty to report them, for in this way only can we arrive at a fuller and better knowledge of this the last great stride in overcoming syphilis.

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A SIMPLE TOURNIQUET

F. D. AUSTIN, M.D., CHARLOTTE, N. C.

This device is made of a piece of ordinary rubber tubing and a clamp from a fountain syringe. The illustration shows the details, making a description unnecessary.

GOLF-BALL BURN OF EYE

H. E. THOMASON, M.D., KANSAS CITY, Mo.

E. F., boy aged 13, in February, 1913, thrust his knife into the center of a golf-ball. Out spurted a liquid directly into the right eye. Dr. Lee Haynes, who was summoned, sent the boy directly to my office; he arrived about two hours after the accident. There was marked swelling of both conjunctivae, so that the lids were everted. Cornea was milky-white; only light perception was present. There was agonizing pain, for which a 4 per cent. solution of cocaine was instilled. Patient was sent to South Side Hospital with instructions to use 1 per cent. solution of atropin sulphate, sterile olive oil and cold application, followed in twenty-four hours with hot. On third day I noticed a detachment of both palpebral conjunctivae. This I allowed to remain to prevent symblepharon while a new one formed. The conjunctiva was removed on the tenth day. The epithelial layer of cornea sloughed on the fourth day and was removed.

The result so far I consider good as there is only a slight symblepharon at outer and inferior angle of the eyeball. Vision unaided 20/40 with a sphere plus 1 20/30. There is a small leukoma on cornea at inner canthus. An ointment of 5 per cent. dionin has been the principal treatment since the acute symptoms have subsided.

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What Is Courage?—The bravest men are not those who are insensible to physical fear, but those who master it by courage of spirit; the purest and noblest are not those who have never felt the temptations of the body, but those who have resisted them.—*The Outlook*.