vitamin B_{12} is involved in various pathological cerebral manifestations(8), which are ultimately based on enzymatic disturbances. Decreases and increases(9) of various hydrolases in degenerating nervous tissue have been reviewed by Cavanagh and Thompson (3). Some of these enzymes (*e.g.* the glycosidase synthesizing nucleosides) as well as transmethylase are interrelated with B_{12} and PGA metabolism.

Summary. The folic acid and Vit. B_{12} content of CSF and B_{12} in serum was studied in more than 300 neurological cases. The PGA levels in CSF in a number of cases were elevated; high values were scattered among a variety of neurological conditions, but were high in four-fifths of cases with MS. The titre of B_{12} in CSF and serum of MS patients was elevated in one-third and reached the upper limit of the normal range in another third of the cases. We assume that increased levels of these vitamins in CSF are not merely an indication of increased permeability of the blood-brain barrier, but of etiological significance for MS.

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Effect of Total Adrenalectomy on Benzol-Induced Leukopenia in Rabbits.* (24098)

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Selling(3) was one of the first investigators to show that following acute benzol poisoning in rabbits there is a prompt fall in circulating white blood count following which, if sepsis and death do not intervene, there is a gradual rise to normal levels after 2-3 weeks. He also noted that, while there was considerable variation in response of various animals to toxic action of the drug, the general response was a fall to low levels following which there was a preliminary rise, followed by a fall, and then again by a secondary rise which gradually reached normal levels. He believed that this phenomenon was probably dependent upon 2 factors: (1) rapidity of recovery of regenerative organs, and (2) amount of toxic material still present in circulating blood.

Weiskotten(4) also noted uniform but complex response of leukopenia in rabbits to acute benzol poisoning and called the phenomenon a "Diphasic Leucopenia." He named the primary fall and rise the "Protophase," the secondary fall and rise the "Deuterophase." He found that the response was not due to antigen-antibody reaction, nor was it due to amount of toxic material present in the circulating blood or delayed absorption of the substance. He also found that in the presence of a pre-existing quiescent infection there was a "lighting up" of the infectious process following injection of benzol and the leucocyte curve behaved in an irregular fashion. The leukocyte count characteristically rose to abnormally high levels despite acute benzol poisoning. Weiskotten and his co-workers were unable to determine the cause of the characteristic diphasic curve. Harkins(2) investigated the effect of nucleotide K96 upon the benzol induced leukopenia and found no significant alterations of the curve. Since a satisfactory explanation for the "diphasic" response has

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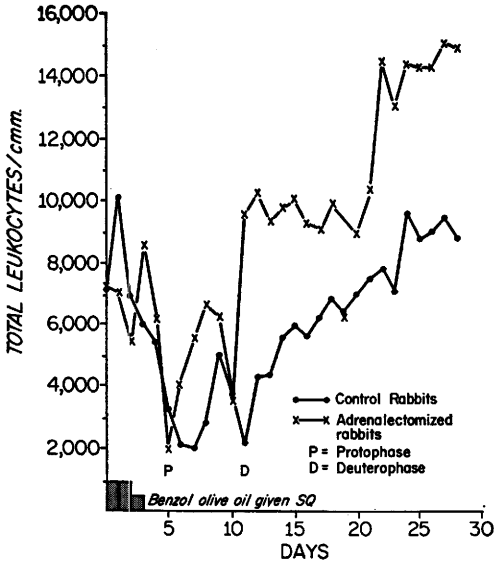

FIG. 1. White blood count changes following subcutaneous administration of benzol-olive oil mixture. (Representative pair of rabbits are from each of the 2 series—control and adrenalectomized.)

not been found an attempt to evaluate the role of the adrenal glands in this phenomenon was devised in the following experiment.

Method. Bilateral total adrenalectomy was successfully performed on 3 male rabbits weighing from 3.5-4.5 kg. Attempts were made to perform a bilateral, one stage adrenalectomy after the method described by Zak, Good and Good(5), but we had a 100% mortality. After losing a large number of animals (approximately 20 rabbits) in the postoperative period, we followed the method described by Criep, Mayer, and Lozano Menchaca(1) except that we gave an initial hypnotic dose of pentobarbital (30 mg/kg) intraperitoneally and did not give intravenous fluids. Postoperatively the animals were given 25 mg cortisone acetate and 5 mg DOCA intramuscularly for one dose. Saline was substituted for water in the diet. With these exceptions the animals were treated and fed in the same manner as the control animals.

The 3 adrenalectomized animals and the control animals were given subcutaneous injections of 1.3 cc/kg of a solution of equal parts chemically pure benzene and olive oil. A full dose was given on each of the first 2 days and only half a dose on the third day. Daily white blood counts were done on all of the rabbits for 1 month.

Results. The comparative results in a representative pair of rabbits are shown in Fig. 1. The characteristic diphasic curve is similar in the experimental and the control animal. The results in the other 2 pairs of rabbits were similar. This would appear to indicate that the adrenal glands have no significant role in producing either the protophase or deuterophase portions of the phenomenon.

Summary and conclusions. No significant relationship has been found between the diphasic response in the benzol-induced leukopenia in rabbits and the presence or absence of adrenal glands.

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