Results. The results of the experiments, summarized in Table II, emphasize the importance of gold in this type of therapy. Even when the amounts of sodium thiomalate and the disulphide form of sodium thiomalate containing the equivalent of 10 times the maximum amount of thiomalic acid contained in the largest dose of gold sodium thiomalate were administered, no therapeutic effect was observed. It is thus obvious that no part of the therapeutic effect of gold sodium thiomalate can be explained on the basis of the action of sulfur alone or on sulfhydryl formation. In addition, the results with sodium succinimido-aurate rule out the need of sulfur in any form. These results demonstrate that, insofar as the mouse disease is concerned, the therapeutic effects are dependent on the presence of gold in the compounds employed. Further studies are being conducted with other heavy metals.

Conclusions. Arthritis of mice, caused by pleuropneumonia-like microörganisms has been treated with gold sodium thiomalate, sodium thiomalate, the disulphide form of sodium thiomalate and sodium succinimido-aurate. The compounds containing gold, gold sodium thiomalate and sodium succinimido-aurate, were effective in curing this disease, the others had no therapeutic effect. Sulfur alone or in sulfhydryl linkage is not necessary in order that gold-containing compounds have a therapeutic effect.

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Changes in Plasma Amino Acid Nitrogen Concentration Following Nitrous Oxide and Ether Anesthesia and Surgery.

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The present observations were made as part of a general study of factors influencing the concentration of amino acids in the plasma. They are reported at this time because of the growing use of amino acid mixtures intravenously during surgical procedures.

Procedures. Nine patients were observed consecutively. The age, sex and operative procedure are noted in Table I. In each instance a blood specimen was obtained after an overnight fast and immediately prior to induction of anesthesia. Subsequently a second

blood specimen was obtained after induction of anesthesia with nitrous oxide and a third after satisfactory ether anesthesia was established and just before actual surgery was started, a fourth at the completion of the operative procedure, and a fifth 2 hours postoperatively. Loss of blood was negligible during the operations and no infusions were given during this time. Each blood specimen was drawn, transferred into a chilled paraffined tube, immediately centrifuged and the plasma removed. The plasma was then oxalated to prevent clotting and analyzed directly for alpha amino acids by the ninhydrin-CO_2 method[1] as modified for blood by MacFadyen, Van Slyke and Hamilton.[2]

Results. The results are summarized in Table I. In each patient a decrease in plasma amino acid nitrogen concentration occurred following induction of the anesthesia with nitrous oxide. In 5 patients no significant change in plasma amino acid nitrogen concentration was noted after the change from gas to ether anesthesia, while in four there was a slight decrease. At the conclusion of the operative procedure, the plasma amino acid nitrogen concentration had decreased further in all patients. Two hours following the operative procedure the plasma amino acid nitrogen concentration had again decreased in 5 of the patients while in 4 there was a moderate increase. The same pattern of change in plasma amino acid con-

TABLE I.
Changes in Plasma Amino Acid Nitrogen Concentration Following Anesthesia and Surgery.

Patient				Plasma amino acid nitrogen conc.				
No.	Age	Sex	Operative procedure	Pre-operatively mg%	After gas mg%	After ether mg%	After surgery mg%	Two hrs post-operatively mg%
1	15	F	Supracondylar Osteotomy, Right Femur	4.10	3.79	3.91	3.31	3.02
2	16	F	Triple Arthrodesis, Foot, Left	4.70	4.21	4.27	3.58	3.24
3	11	M	Triple Arthrodesis, Foot, Right	4.06	3.74	3.83	3.47	3.66
4	8	F	Shelf Operation, Hip, Left	4.46	4.27	4.27	3.62	3.83
5	10	M	Drainage of Psoas Abscess, Left	3.33	2.99	2.97	2.88	2.78
6	10	F	Sequestrectomy Saucerization, Right Femur	4.43	4.00	3.87	3.42	3.50
7	13	M	Rotary Osteotomy, Upper Third, Tibia, Right	4.60	4.25	4.06	3.58	3.47
8	11	M	Triple Arthrodesis, Foot, Right	4.46	4.08	4.01	3.48	3.32
9	15	F	Hallux Valgus, Operative Correction	4.94	4.62	4.51	4.15	4.42
			Average	4.34	3.99	3.96	3.50	3.47

1 Van Slyke, D. D., Dillon, R. T., MacFadyen, D. A., and Hamilton, P., *J. Biol. Chem.*, 1941, **141**, 627.

2 MacFadyen, D. A., Van Slyke, D. D., and Hamilton, P., to be published.

centration was observed in the one patient with chronic hypoaminoacidemia (No. 5).

Discussion. The average plasma amino acid nitrogen concentration of this group of patients was 4.47 mg per 100 ml if the one patient with chronic hypoaminoacidemia is excluded. This value is in good agreement with the previously reported normal of 4.50 mg per 100 ml by this method.[3] The observed decrease in plasma amino acid nitrogen concentration in the patients here reported was much greater than day to day fluctuations which we have observed in individual patients. Such fluctuations have remained within the remarkably narrow limits of ±.05 mg per 100 ml plasma for periods as long as two months if there was no conspicuous change in the patient's condition.

Summary. In 9 children the concentration of amino acid nitrogen in the plasma decreased on the average of 0.38 mg per 100 ml following anesthesia with a further decline averaging 0.46 mg per 100 ml during a surgical procedure. In 5 of the 9, the plasma amino acid concentration was lower 2 hours after operation than at the conclusion of the operative procedure.

The pattern of change of plasma amino acid concentration in one patient with chronic hypoaminoacidemia was similar to those with normal concentrations preoperatively.

Additional studies are being prosecuted to elucidate an explanation of the factors causing the observed changes.

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The Portal Venous Pressure in Man.

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Mall[1, 2] appears to have been the first to record the portal venous pressure in animals under experimental conditions. The later de-

3 Farr, L. E., McCarthy, W. C., and Francis, T., Jr., *Am. J. Med. Sc.*, 1942, **203**, 668.

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1 Mall, F., *Arch. f. Anat. u. Physiol.* (Du Bois-Reymond, physiol. Abt. 1892, p. 409).

2 Mall, F. P., *Johns Hopkins Hospital Reports*, 1896, **1**, 111.