ach wall. Near this last ulcer was a second small acute ulceration 2x1.5 mm.

Two dogs died of perforated duodenal ulcers, 39 and 53 days respectively after operation. In the first one the duodenal ulcer was 2 cm. distal to the pylorus and measured 1.4x0.8 cm. There was an associated acute gastric ulcer, 1.5 cm. proximal to the pylorus, 4x6 mm. in size. In the second case the duodenal ulcer was 2.5 cm. distal to the pylorus and measured 2x2.5 cm. In this case there was also an associated prepyloric ulcer 1x0.5 cm., the margins being indurated and rolled, with the appearance of being chronic.

One dog died 144 days after operation and a chronic indurated duodenal ulcer 1.2x0.8 cm. was found 2 cm. distal to the pylorus. The seventh dog died of pneumonia 40 days after operation, but revealed no peptic ulcer at autopsy.

There were no ulcers at the anastomotic rings and not other gastro-intestinal pathological findings, except in the seventh dog, in which 2 large acute ulcers were present in the colon, 8 cm. distal to the anastomosis.

In 2 dogs a duodeno-colostomy was done and they lived 22 and 28 days respectively. No peptic ulcers were present in these at autopsy. In several dogs that received the same care and food as the above dogs, but which died from other experimental procedures, no peptic ulcers were found.

Anorexia, vomiting and tarry stools occurred in the dogs with peptic ulcer. All the dogs in the series lost considerable weight. There are 2 factors accountable for this: first, a decrease of bowel absorptive space, and secondly, refusal of food by the dogs after ulcer symptoms developed.

Studies are being made to determine a specific etiological factor for the occurrence of peptic ulcer after this procedure.

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A Coagulo-Flocculation Test for Malignant Tumors.

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The study of protein fractions of normal serums, those in various diseases, and malignant tumors led to the development of a diag-

nostic procedure for malignant tumors. The essential constituents are: (1) Blood serum inactivated at 55°C. for ½ hour, which should be neither contaminated nor hemolized. (2) The antigen is prepared by extracting finely ground beef heart with 95% alcohol in the ratio 1 :10 for 3 days at 37°C. and overnight at room temperature and then filtering. (3) A ½% watery solution of sodium sulphate serves as antigen diluent.

The serums are diluted before their use in the test according to the percentage of hemoglobin. Dare's hemoglobinometer is used as a standard, and to the percentage of hemoglobin obtained 10 is added and the sum is divided by 20, which gives the dilution for the respective serum. (For instance, the reading was 70% plus 10 = 80 ÷ 20 = 4. The dilution of the serum in this case would be 1:4.) Where the Dare reading is 45% or less, the serums should be diluted only to 1 :3. All serums are diluted with the antigen—sodium sulphate mixture up to 1 :3, and if a further dilution is necessary it is done with distilled water.

Titration of antigens is carried out as follows: Increasing amounts of undiluted antigen (.16 cc., .18 cc., .20 cc., .24 cc., .26 cc., etc.) are placed in the corresponding tubes of 2 rows, (each with 8 tubes). In each tube of the first row 0.6 cc. of the diluted malignant serum are added and each tube of the back row received 0.6 cc. of the diluted normal serum. The serums (0.2 cc.) when added to the antigen-sodium sulphate mixture (0.4 cc.) are diluted 1 :3; if the serum requires a further dilution, it is done with distilled water before the addition of the serum. The tubes are thoroughly shaken and then placed in a water bath for 5 minutes at 55°C. After the incubation each tube is diluted with 5 cc. of distilled water, incubated for ½ hour at 55°C., and the results recorded. The largest amount of antigen which causes only turbidity in the syphilitic tube and a distinct flocculation in the malignant tube is selected as the proper amount for the test (= titre). The titrated amount of antigen should be also tested with syphilitic, jaundice and anemic serums. The titre remains the same for an indefinite period if the antigen is properly preserved.

The routine test: Wassermann tubes are placed in 2 rows in the racks. The tubes of the first row are used for the main test with the unknown serums and also for the malignant, syphilitic, jaundice and anemic controls. The last tube in the first row contains the antigen control. The tubes in the second row serve as the serum controls for the unknown serums and also for the malignant, syphilitic, and jaundice and anemic serums. The titrated amount of the

diluted antigen is placed in each tube of the first row. The corresponding amount of a 2% solution of sodium sulphate is placed in all tubes of the second row. Six-tenths cc. of each diluted serum are added to one tube in the first row and an equal amount of the same serum to the tube behind in the second row. Six-tenths cc. of a ½% solution of sodium sulphate (instead of serum) are added to the antigen control. The procedure for serums which require a higher dilution than 1:3 is described above (see antigen titration). The ingredients of the serum controls should be the same as those used for the unknown serums. All tubes are then shaken and placed in a water bath at 55°C. for 5 minutes. After the incubation each tube is diluted with 5 cc. of distilled water, again incubated for ½ hour at 55°C., and the results read. If the required amount of the unknown serum is not available, the test may still be performed successfully if the remaining constituents for the reaction are decreased proportionately.

Controls: The following controls are necessary each time the test is carried out: (1) antigen control, (2) serum control (each serum should have a serum control), (3) malignant, syphilitic, jaundice and anemic controls.

Interpretation of the results: The controls should be examined before making readings of the unknown serums. The malignant control should show a thick layer of coagulated serum floating on the surface of the salt solution, which contains many large floccula. All other controls should remain uniformly turbid. One tube is read for each unknown serum. Tubes with a distinct flocculation or showing in addition a layer of suspended coagulated serum on the surface of the saline are read as strong positive. Tubes with a fine flocculation are read as weak positive. Tests with doubtful flocculations are repeated. Uniformly turbid tubes are read as negative.

This test applies to all types of malignant tumors. The statistical data concerning the sensitiveness of the test include 179 malignant tumors with approximately 85% positiveness, while 154 cases of various diseases and 105 cases of benign tumors give non-specific reactions in approximately 2% of the cases.