Thio-glucose also stimulates bacterial growth and it was thought that perhaps coupling the thio-radicle to a substance like phenol or cresol would overcome this objection. Later experiments, using thio-cresol, bore out this idea, for several leg ulcers and a bed sore treated with these substances showed a minimum amount of surface pus. Once again, however, the most advantageous concentrations and means of application require further investigation. For further details of this work see 1929, Reimann, S. P., and Hammett, F. S., Proc. Soc. Exp. Biol. & Med., vol. xxvii, pp. 20–22.

Dr. Astley P. C. Ashhurst confessed to more or less ignorance, regarding SH and OH groups, etc., but said that he was aware of the fact that rest in bed, elevation and strapping with adhesive plaster would cure leg ulcers.

STATED MEETING HELD DECEMBER 2, 1929

HÆMOLYTIC ICTERUS; SPLENOMEGALY, MULTIPLE ABSCESSES OF SPLEEN, SPLENECTOMY

Dr. Norman S. Rothschild presented a young woman, aged twenty years, who was admitted to the Northern Liberties Hospital, in the service of Dr. Leonard Averett, September 14, 1928, with the history of having had a three months' pregnancy interrupted six days before. This condition was accompanied by severe hæmorrhage. The patient complained of severe pain in the left lower abdomen and pelvic examination revealed a uterus somewhat larger than normal, enlargement being due to subinvolution and not to retained products of conception. The left tube was enlarged and tender; the involvement of the right was the same, but to a lesser degree. The abdomen was not distended; there were visible pulsations. Liver dulness was increased about two inches below the costal margin. The spleen was palpable. A soft systolic murmur was transmitted to the vessels of the neck and to the axilla. The heart sounds were weak. Her skin was greenish yellow in color. Temperature was 103 2/5, pulse 118, respirations 28. Blood pressure, 100 over 60. The blood count was erythrocytes 1,700,000, hæmoglobin 28 per cent. and 8,100 leucocytes. The urine showed albumen and twenty erythrocytes to the field.

Her previous medical history was very interesting. She stated that she had been a patient in the Children's Homeopathic Hospital two years ago, suffering with jaundice, anæmia and an enlarged spleen. This jaundice was noted by her sisters and brothers for many years and she was constantly the subject of teasing because of her yellow color. A report from the hospital stated that she was admitted with a severe anæmia, jaundice, and an enlarged spleen, which extended into the left iliac fossa. Her blood count at that time was as low as 2,200,000 erythrocytes and 48 per cent. hæmoglobin. The Van den Bergh was direct; delayed and indirect; bilirubin slightly positive. Fragility of red corpuscles, complete hæmolysis in 0.44 per cent. salt solution.

The following day she was given 200 cubic centimetres of blood and showed a slight improvement. The temperature began to approach normal and 400 cubic centimetres of blood was given two days later. Eleven days after admission her temperature rose to 104, then to 104 4/5 with some remission and then to 106. Her pulse and respirations increased with the temperature rise. She was again transfused, 300 cubic centimetres of blood being given. The transfusions were not attended by reactions. Blood cultures were sterile. The blood counts showed but a slight increase in the erythro-

cytes and hæmoglobin from the transfusions. The icteric index at first 9, rose to 60. The Van den Bergh at first delayed direct, became moderate direct. A firm mass, tender to touch, developed in the left lumbar region. Possible kidney involvement was considered and a pyelogram was made. X-ray findings of Doctor Bruck were as follows: "A large dense mass is seen in the left abdomen reaching down to the crest of the ilium and a little below it which merges in its upper portion with the shadow of the spleen. It is too far external to be the kidney." The jaundice increased and there was considerable tenderness over the gall-bladder. Cholecystographic studies showed that the gall-bladder was not definitely outlined. No dye stained shadows of stones were seen and after the ingestion of food, there was no change in the appearance. The conclusions were that the failure of the gall-bladder to outline in spite of the absorption of most of the dye, was suggestive of a chronic gall-bladder condition with obstruction in the cystic duct.

Doctor Rothschild saw the patient eighteen days after admission, and because of the enlarged spleen and the history of its enlargement two years before, the character of the temperature, which was "pump handle," the history of the pelvic infection and the general condition of the patient, felt the condition to be a blood stream infection despite negative blood cultures, and recommended the use of Pregl's iodine or mercurophan intravenously. Dr. S. A. Lowenberg saw the patient the same day and made the following report: "Because of previous history of enlarged spleen and anæmia, both of which have become aggravated with the acute infection, it is plausible to consider that she has a chronic splenomegaly superseded by an acute infectious splenitis." He recommended X-ray treatments. Intravenous therapy and X-ray treatments had no affect upon the patient. Biliary drainage was performed with good results, the jaundice being less. This procedure was performed every day with some relief to the patient. The jaundice, however, varied at times. Numerous attacks of severe sharp pain in the left lumbar region occurred and these were interpreted as emboli of the spleen. The bleeding time was three and one-half minutes and the coagulation time was five and one-half minutes. Repeated pelvic examination showed these organs to have returned to the normal size.

The patient's general condition did not improve, and on December 4, 1928, splenectomy was performed. The spleen was adherent to the diaphragm, to the stomach, transverse colon and descending colon. The diaphragmatic adhesions were separated with considerable difficulty, but without hæmorrhage. The other adhesions were severed between ligatures. As the pedicle was brought into the wound there was spill of pus from the spleen. The vessels were doubly ligated and severed. No accessory spleens were seen. Because of the spill of pus the gall-bladder and liver were not inspected. The wound was closed in layers and drainage was instituted through a stab wound posteriorly. The patient's condition was very poor on the table and stimulation was resorted to. Her post-operative course was uneventful with the exception of an occasional rise of temperature to 101 to 102 and once to 103, then to a return to normal. The greenish yellow hue which this patient exhibited before operation gradually faded. The drainage was at first sanguineous but later became purulent. Slight tenderness over the gall-bladder was present at times, but duodenal lavage would relieve it.

February 19, 1929, she was readmitted complaining of a pain in the right and left upper quadrants and considerably jaundiced. She had a sinus in the abdominal wound from which greenish pus was discharging. There was tenderness and rigidity of the abdominal muscles in the upper quadrants.

The temperature and pulse were normal. Blood count showed 3,410,000 erythrocytes and 57 per cent. hæmoglobin. Icterus index 33, Van der Bergh direct immediate. Biliary drainage showed "A" bile only. Temperature remained normal about a week when she became toxic, temperature was elevated and she developed pain and tenderness in the left upper quadrant. The sinus was investigated under gas anæsthesia and a small amount of greenish pus exuded. Drainage was established. The temperature remained high for four days and then became normal until the time of her discharge from the hospital.

Seven months after operation she still complained of slight pain in the upper right quadrant and was receiving treatment in the gastro-intestinal clinic.

The pathological examination of the spleen was as follows. It measured 36x15x5 centimetres. The capsule appeared normal and on sectioning there was an abscess 5 centimetres in diameter, with a rough gray wall. There were several small abscesses scattered throughout. There were numerous yellow areas, which are firmer in consistency and are infarcts. The culture for this abscess showed pure colon bacilli.

Post-Operative Blood Studies Showed the Following Change in the Blood Picture

Time	Erythrocytes	Leucocytes	Hæmoglobin per cent.
3 days	2,330,000	....	40
4 days	2,790,000	....	42
6 days	2,990,000	....	40
16 days	2,990,000	....	42
18 days	3,030,000	25,500	47
49 days	3,400,000	15,600	....
10 weeks	3,410,000	....	57
7 months	4,500,000	12,800	75

The speaker remarked that Billings in his paper on Abscess of the Spleen reported three cases, two from blood stream infections. That of Doctor Jopson's from puerperal sepsis, his own from a carbuncle of the neck, and that of Doctor Klopp from a urinary tract infection. He states that as the evolution of the abscess progresses from the upper pole towards the thorax, or from the lower pole towards the general peritoneum, symptoms of a pleuro-pneumonia or abdominal nature may develop. The treatment of uncomplicated cases, is splenectomy, of the complicated, splenotomy. In this case splenectomy was performed without the knowledge of the existing abscesses, although the chief resident physician, Doctor Zimoring, believed this condition existed. Without splenectomy this patient's primary condition, hæmolytic icterus, would certainly have not been cured.

PERFORATED DUODENAL ULCER WITH MULTIPLE SEQUELÆ

Dr. Edward J. Klopp reported the case of a man, twenty-seven years of age, who was admitted to the Memorial Hospital, September 10, 1928, with the diagnosis of perforated duodenal ulcer. He had had fairly definite ulcer symptoms for three years. The attacks were subject to seasonal exacerbations occurring most often in the fall and winter, subsiding during hot weather and would last for from five to eighteen weeks and disappear for a similar period. Two days prior to admission, three hours after breakfast, he complained of nausea and took no more food that day. The ulcer perforated on day of admission, five hours after breakfast, and he was

operated upon eight hours after perforation under nitrous oxid and oxygen. There was a moderate amount of turbid fluid in the peritoneal cavity. The ulcer was closed with a linen suture. A typical posterior gastro-jejunostomy was done using linen for the serous suture. A rubber covered gauze drain was inserted to the subhepatic space. Smears and cultures of the peritoneal fluid showed streptococci and staphylococci. Convalescence was satisfactory until the twelfth day when he had pain in the right lower chest and a temperature of 102. X-ray of the chest on October 6, 1928, revealed no evidence of a lesion above the diaphragm. The diaphragm was in normal position, but slightly restricted from its excursion. October 13, 1928, a right subphrenic abscess was drained by resecting a portion of the eleventh rib under local anæsthesia. Culture showed streptocci and staphylocci. October 19, there was X-ray evidence of right pleural effusion and an interlobar shadow suggestive of an abscess. He coughed considerably, continued to lose weight and his temperature was of the septic type. The symptoms and signs indicated a large collection of fluid in the right pleural cavity. X-ray on November 7, 1928, seemed to show less fluid than at the previous examination. November 18, 1928, the right chest was drained of a large quantity of foul smelling pus by resecting a portion of the ninth rib under local anæsthesia. Culture of pus obtained four days previously by aspiration of the chest showed large rods, most likely colon bacilli. At a subsequent X-ray examination a piece of rubber tubing three inches in length was found within the pleural sac. It was easily extracted with forceps. He had improved sufficiently to leave the hospital December 22, with pus draining from the pleural cavity and from the abdominal sinus. The wound to the subphrenic space had closed.

February 11, 1929, while a nurse was irrigating the abdominal wound with salt solution the patient coughed up the irrigating fluid and a considerable quantity of pus. He was admitted to the Pennsylvania Hospital two days later. Lipiodol was injected through a catheter in the abdominal sinus. It followed underneath the dome of the diaphragm to about its apex, at which point a very small shadow of lipiodol seemed to pierce the diaphragm and came to an abrupt end. They had expected to demonstrate a fistula between a bronchus and the abdominal sinus communicating through the diaphragm. Irrigation of the empyema cavity distinctly showed it to communicate with a bronchus. Lipiodol injected through the empyema wound showed a cavity of 2 or 3 cubic centimetres. He was discharged from the hospital, March 9, 1929, with no clinical evidence of bronchial fistula and the abdominal wound was healed.

April 8, 1929, he complained of severe headache which was continuous and was readmitted April 11, in a stuporous condition, moaning and mumbling of pain in the head. He did not move his left extremities. The neurologists consulted thought he had a brain abscess deep in the right frontal region with secondary meningitis. They advised against operation and the patient rapidly went into coma and died on April 14. Blood culture was negative. Spinal fluid examination showed a great many pus cells; no organisms. Culture showed no growth within forty-eight hours.

At autopsy there were adhesions extending from the incision backward and upward to the liver; no free fluid. The opening between the stomach was large, free of scars or adhesions. The mucosal surface of the ulcer showed it to be fairly well healed. No scars or adhesions were found about it except for the scar of the ulcer itself. A small portion of linen suture remained on the serosal surface. The upper and middle lobes of the right lung were rather dark and mostly air-containing. In the lower lobe a

bronchus extended into an area consisting of a central abscess of about 2-3 cubic centimeters in size with five or six smaller abscesses scattered near it. Adhesions obliterated the interlobar fissures quite well. There was no empyema cavity that could be distinguished. In the diaphragm there was no path or scar to indicate direct extension of pus from below upward. *Brain and skull.*—On exposing the skull just above the right motor area there was a superficial staining with blood. On removing the skull cap no evidence of deep lesion was found in the bone. The dura contained moderately injected vessels. On incision in the midline just anterior to the central portion of the brain considerable amount of dirty gray pus exuded on the slightest pressure. There was evidence of meningitis over the vertex. The medulla, pons and part of the cerebellum adjoining them were covered with a thick, yellow plastic exudate possibly greater on the right side. The culture showed colon bacilli and staphylocci. The abscess was later reported to have been in the frontal and temporal lobes.

The reporter stated that he had lost three patients with perforated duodenal ulcer in which there was subphrenic infection. In one of these a drain had been placed between the liver and diaphragm. He developed empyema. Autopsy showed a necrotic area in the diaphragm 3 centimetres in diameter with perforation. Another case, not his own, died three days after the operation for perforated ulcer, from respiratory infection. Autopsy also showed a gangrenous patch in the diaphragm without perforation. The peritoneum was wiped fairly dry in the case reported. It is difficult to prevent subphrenic infections in these cases.

RUPTURED ADENOMA OF THE THYROID

Dr. Henry F. Ulrich, by invitation, reported the case history of a man forty-two years of age who was admitted in the service of Dr. Charles H. Frazier at the University of Pennsylvania Hospital July 11, 1929. His chief complaints were: difficult breathing which appeared suddenly, and with swelling of and pain in the neck. For eight years previous to admission he had had an enlargement of the right lobe of his thyroid which from his history was undoubtedly a toxic adenoma. About three hours before his admission to the hospital, while having a friendly tussle with a friend, he suddenly developed a sense of suffocation, was unable to speak and could breathe only with great difficulty. Immediately he developed severe pain in the base of his neck as the neck became swollen and tense. Severe dyspnœa persisted for about one hour, but was considerably relieved at the time of admission. By that time, however, the swelling had increased and dysphagia became a troublesome complaint.

His past medical history and family history were negative.

He was a well-developed large man. Blood pressure 140/70; temperature 99.4; pulse 100; respirations 22. The face was flushed and slightly dusky. Eyes, ears, nose and mouth were grossly negative. Neck showed a tense infiltrating swelling of almost the entire anterior and lateral aspect, more marked on the right side. There was no discoloration or œdema of the skin and the mass was only slightly tender. Heart and lungs were essentially negative.

Dr. I. S. Ravdin saw the patient soon after admission and made a diagnosis of ruptured adenoma of the thyroid with hæmorrhage into the neck. As the patient was in no eminent danger from tracheal compression, operative intervention was voluntarily delayed. The patient was given a hypodermic of morphine sulphate grains 1/6 and atropine sulphate grains

1/150 and an ice-collar was applied. He had a fairly comfortable night. The following day Dr. Gabriel Tucker examined the patient and reported as follows: "Examination of the pharynx shows considerable bulging on the right side of the posterior pharyngeal wall. The mucosa is bluish in appearance. Acinitis and discoloration extends around the right lateral wall of the pharynx, the base of the tongue, and the epiglottis. There is considerable swelling in the pyriform sinuses on either side, apparently due to swelling of the posterior and lateral pharyngeal walls. Larynx—motility normal, although there is considerable displacement of the larynx toward the left with tilting toward the left side. Both sides seem to move equally. No evidence of compression of the trachea on mirror examination. This, of course, does not exclude the lower portion of the trachea, as only the upper two or three rings could be seen with the mirror. Patient was not dyspnœic at the time of examination. This condition could arise from a submucous hæmorrhage into the tissues of the pharynx extending around the lateral and posterior walls.

During this day there was gradual but increasing dyspnœa until 5.30 P. M. when the patient was operated upon under local anæsthesia by Doctors Frazier and Ravdin. A mass consisting of ruptured adenoma and blood clot the size of a small grapefruit was found. The blood had infiltrated all the muscles of the neck including the pharyngeal wall. The sterno-cleidomastoid muscle, which has its own sheath, was also infiltrated and clots filled the retrotracheal space from the level of the sterno-clavicular articulation to the mandible. There was some infiltration of blood on the left side. A right lobectomy was done, the wound packed with iodoformed and vaseline gauze, and left open. Hæmostasis was complete at the close of the operation. The post-operative convalescence was uninterrupted until June 21, when a secondary closure of the wound was done. June 28 the patient was discharged with the wound still draining some serum. July 4 the discharge from the wound became purulent and the patient said his neck became painful. On July 13 he was readmitted to the hospital with a marked cellulitis of his neck. At this admission he had some dysphagia but no dyspnœa. Temperature was 102, pulse 98. The incision was reopened under local anæsthesia that evening and packed with iodoformed gauze. Moist heat was kept on the wound and at the end of twenty-four hours his temperature and pulse were normal, and remained so until discharge on the ninth day. During this admission he was again examined by the Bronchoscopic Service who reported the pharynx and larynx normal.

Six weeks later the patient reported that his wound was healed and that he was doing his usual work with no discomfort.

Primary emergency surgery of the thyroid gland is decidedly unusual. The outstanding indication for such is hæmorrhage, either into the gland or from the gland into the neck, of sufficient amount as to cause respiratory embarrassment. Hæmorrhage may be spontaneous or the result of trauma. There is considerable variety in the degree of hæmorrhage encountered, from that reported by the pathologist, in specimens of small adenomas with cystic changes to the massive hæmorrhage causing such tracheal compression that death would ensue without prompt intervention.

The largest series of cases of spontaneous hæmorrhage into a goitre which has been published is that reported by Schwoerer [1] who found 18 such cases among 2,500 goitre patients, with a mortality of 27.7 per cent. Von Ziemack [2]

reported one case in which the subcutaneous extravasation spread down the chest and abdominal wall as far as the umbilicus. Haim[3] reported several cases of spontaneous hæmorrhage into strumous thyroids. Deegan[4] has recently reported a case which is strikingly like ours.

Gunshot and stab wounds were responsible for the traumatic cases reported by Alamartine[5] and Lenormant.[6]

The diagnosis of rupture of an adenoma of the thyroid with hæmorrhage into the neck should not be difficult, especially when history of preceding goitre is obtained. A history of sudden increase in the size of the neck with phenomena of compression makes it a reasonable supposition. The symptoms of hæmorrhage reach a climax and subside more quickly than in acute inflammation of the thyroid (Crotti).[7]

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[4] Deegan, J. K.: Clifton M. Bull., vol. xv, p. 85, 1929.
[5] Alamartine, H.: Presse. Med., vol. xxvii, p. 107, 1919.
[6] Lenormant, C.: Presse. Med., vol. xxxvi, p. 1919, 1928.
[7] Crotti, Andre: "The Thyroid and Thymus," Lea and Febiger, Phila., 2nd ed. p. 108, 1922.

PHRENIC NERVE STIMULATION IN DIAPHRAGMATIC HERNIA

Dr. Richard Overholt, by invitation, read a paper with the above title for which see page 381.

Dr. George P. Muller said that he wished to emphasize the point brought out by Doctor Overholt regarding the excellent relaxation of the abdominal wall by spinal anæsthesia and of the diaphragm by the phrenic nerve freezing. Often in the literature, the old approach is condemned because of the difficulty of operation, but these procedures made operation exceedingly easy. The speaker was disappointed with the recurrence, but would be willing to operate again and use silk sutures. The suturing was very carefully done with chromic catgut mattress sutures, overlaid with staggered interrupted sutures. Doctor Overholt and he had read Harrington's article, but were not aware that the preliminary stimulation of the phrenic nerve had been done before as an aid to diagnosis. This was Doctor Overholt's suggestion and it worked out quite well.

MORTALITY AND END RESULTS OF OPERATION FOR ABSCESS OF THE LUNG

Dr. George P. Muller read a paper with the above title for which see page 361.