June 25, the twelfth day, the bronchopneumonia seemed slightly improved. Temperature 99.2. Dr. Joseph M. Patton kindly made an examination of the patient's heart on this day and reported the findings negative.

June 26, the thirteenth day, the gangrenous patch on the right cheek dropped out without much tissue destruction. Blood for a Wassermann was taken which was later reported negative.

June 27, the fourteenth day, the gangrenous patch on the left cheek extended to a slightly greater depth than on the opposite side and the resulting scar was consequently more extensive. The general condition of the patient was considered fair under the circumstances, though the pulse and respiration were rapid and bronchopneumonia was still present. The child, however, seemed to be losing in strength. He was toxic, had involuntaries, but apparently suffered little pain. The involved regions were dry except at the demarcation borders, and were shriveling up and separating. On the evening of this day, the child died as a direct result of the pneumonia, but a general toxemia was of course a strong contributing factor.

Had it not been for the pneumonia, it is possible the patient would have eventually recovered. Nevertheless, amputation of both lower extremities, one at the upper third and one at the middle third of the leg, would have been inevitable. It would also have been necessary to adopt a similar procedure with respect to the greater part if not all of both hands.

The blood examination on the last day was as follows: Red cells, 1,650,000; hemoglobin, 27 per cent. (Sahli); white cells, 36,000. Differential, 200 counted, small lymphocytes, 41 per cent; large lymphocytes, 4 per cent.; polymorphonuclear neutrophils, 51 per cent.; eosinophils, 1 per cent.; transitionals, 3 per cent.

NECROPSY

In 1901, Greiwe²¹ stated that the number of cases of Raynaud's disease examined postmortem could be summed up on the fingers of one hand. Consequently it is to be regretted that space does not permit the presentation of the complete necropsy findings.

Among the chief points demonstrated by Dr. H. Gideon Wells, who performed the necropsy, are the following:

On cut section, the gangrenous areas over the legs were found to be markedly edematous and to involve all the soft tissues down to the bone, which also showed erosion. The thymus was smaller than normal. The thyroid seemed somewhat enlarged and succulent; no gross changes were noted.

The heart was normal in size. No changes were seen in the aorta. The valves were normal.

The lower lobes and lower half of the upper lobes of the lungs were consolidated.

The kidneys were very pale, somewhat firmer than normal. Cross-section showed them markedly pale but otherwise normal. The adrenals were enlarged.

The large vessels of the lower extremities showed no evidence of thrombosis or embolism. The right femoral vein showed a large antemortem clot.

ANATOMIC DIAGNOSIS

1. Acute symmetrical dry gangrene of both lower extremities, both upper extremities and cheeks, with beginning sequestration.

2. Thrombosis of right femoral vein. Dr. Wells believed this to be of recent formation and secondary to the gangrenous process.

3. Bilateral confluent pneumonia of both lower lobes. Discrete bronchopneumonia of both upper lobes.

4. Acute hyperplasia of peribronchial lymph glands.

5. Perilobular infiltration of liver.

6. Fatty degeneration of the kidneys.

7. General lymphadenoid hyperplasia including glands, spleen and Peyer's patches, the latter of which were pigmented.

Later Dr. Wells reported that the histologic examination gave no definite findings which could throw light on the etiology of the gangrene.

Dr. George Mather, of the Memorial Institute for Infectious Diseases, conducted a bacteriologic examination. He made cultures from the thrombus of the right femoral vein and isolated a green streptococcus and a hemolytic streptococcus. Injected into rabbits, these caused a malignant endocarditis.

25 East Washington Street.

AN UNUSUAL CASE OF SALVARSAN POISONING

KARL C. EBERLY, M.D., FORT WAYNE, IND.

Mr. B., aged 36, consulted a physician for lightning pains in the calves of his legs, occurring chiefly at night. Family history was negative. His past history gave no definite evidence of syphilis, although, twelve years ago, he had gonorrhea and thought possibly that he had contracted syphilis at the same time. The Wassermann on the blood was strongly positive. Physical examination was negative. Neural examination showed no other signs than absent knee-jerks. No examination of the spinal fluid was made.

An early tabes was diagnosed and neosalvarsan was chosen for treatment. Through an error 0.6 gm. of salvarsan was mixed in 10 c.c. of freshly distilled water, only a part of it dissolving. This unneutralized solution of salvarsan was injected into the cephalic vein of the right arm. Almost instantly the patient complained of a choking sensation and constriction of the pharyngeal muscles. He became extremely pale, pulse was small, weak and rapid. Respiration was dyspneic. At once the needle was removed, about 5 c.c. having been injected. Within an hour he was markedly prostrated, coughed and vomited and complained of general weakness and pain in the region of the left kidney. Nitroglycerin $\frac{1}{400}$ grain was administered orally every twenty minutes until the pulse improved. Then it was repeated every two hours.

For the next twenty-four hours his general condition remained the same. He voided no urine. A catheterized specimen of 3 ounces showed a trace of albumin but no casts. On the second day the pain in the region of the left kidney and suppression of urine continued. The patient complained of weakness, chilling and a general myalgia. A phlebitis started in his cephalic vein, extending from the point of injection to the shoulder. The arm was swollen, reddened and painful. The vein appeared to be completely obliterated. His temperature and pulse were 100.

On the third day I was consulted over the long distance telephone. Fischer's solution, hot packs, saline cathartic, potassium acetate and digitalis were suggested to increase the elimination and local applications for the phlebitis. Fischer's solution, 6 to 8 ounces, was given every four hours by rectum and 1 dram of sodium bicarbonate every two hours by mouth. The other drugs were administered in the customary dosage. During the next twenty-four hours he excreted 15 ounces of urine, and the pain in the region of his left kidney was much improved. His prostration diminished but the severity of the phlebitis increased. His arm became much more painful and swollen. His temperature was 101, pulse, 105. On the seventh day I first saw the patient. He was a strong, powerfully built man, well nourished but now appeared thoroughly exhausted. He complained of weakness and pain in the right arm. This arm was twice its normal size and severely inflamed. The cephalic vein was palpated as a rigid tube. Physical examination of the heart and lungs was negative. The pulse was rapid—100—but of good volume and tension. Temperature was 102.4. Since the third day the amount of urine had gradually increased to normal. The urine showed a trace of albumin without casts.

21. Greiwe: Philadelphia Med. Jour., 1901, viii, 236.

The leukocytes numbered 12,500. The differential gave 30 per cent. polymorphonuclears. The diet had been liquid.

After six weeks the phlebitis subsided, the urine became free from albumin and apparently he has not suffered any permanent lesion from this mistake.

Whether the marked toxic symptoms were due to the acidity of the solution or the salvarsan would be difficult to say. It is of interest, however, to note that the alkaline therapy relieved the anuria and toxic symptoms almost immediately.

Gauntt Building.

TUMOR OF THE HAND CAUSED BY FOREIGN BODY

F. P. HAMMOND, M.D., CHICAGO

R. S. S., an American, aged 30, complained of a tumor mass the size of a hazelnut which had been deeply seated in the thenar eminence of the left hand as long as he could remember. Only occasionally did the mass produce any discomfort yet a constant worry possessed him lest some day it should turn into a cancer. About six weeks ago it began to enlarge toward the surface, became slightly reddened and tender and seemed to grow gradually and slowly worse, which alarmed him sufficiently to cause him to seek treatment.

His family history was negative. His past history was negative, except that about two months ago he remembered giving the "lump" an accidental bump while swimming, a fact he had almost forgotten because it caused him so little pain.

For the last six years the patient had been a university student, previous to which time he worked on his father's farm. He denied venereal history.

A general examination was negative in result; there were no other enlargements. Temperature and pulse were normal.

Local examination revealed the tumor to be hard and elastic, movable, with a cone-shaped projection toward the surface, slightly tender and reddened but with no demonstrable fluctuation and apparently no connection with the bone.

The Wassermann test was negative. The Roentgen ray revealed nothing.

Diagnosis of a chronic attenuated infection probably due to a foreign body was made and under local anesthesia the mass was incised. About 1 cm. from the surface the slightest bit of pus exuded. Deep in the center of the mass a locust thorn 8 millimeters in length was discovered and removed.

On seeing the thorn he exclaimed, "Well, let me see, I was about 11 or 12 years old when I got that sliver." It is needless to say an uneventful recovery followed.

30 North Michigan Boulevard.

Removal of Swallowed Foreign Bodies.—The following may be of interest to some on account of the simplicity of the treatment. I claim no originality for it: Mr. C. B., aged 29, came to my office, October 7, complaining of a pricking sensation in the left hypochondrium, annoying him, but felt only occasionally. Twenty-four hours previously, while eating some pudding, he bit on a hard object, which proved to be a piece of glass. He did not think he swallowed any glass, but in view of the history, I concluded that he had. I gave him about 2 or 3 drams of absorbent cotton, with instructions to pick it into small shreds, put them into a glass of milk and drink the mixture. In addition, I gave him half an ounce of magnesium sulphate crystals, with instructions to dissolve in a half glass of water, and take one hour after the milk and cotton. The motions were passed in a vessel, and on examination, a wedge-shaped piece of glass about three-eighths inch long, very sharp, was found entirely covered with cotton. The pricking sensation disappeared. Tacks, pins and other pointed or rough foreign bodies may be easily removed by this means in many instances.

R. PENN SMITH, M.D., Pittsburgh.

Therapeutics

TOXICOLOGY OF EMETIN

Dr. F. B. Sigworth, Albuquerque, N. M., writes:

Will you please give me the toxicology of emetin hydrochlorid used in hemorrhage? I wish to test it for its effect in tuberculosis; also to try it out experimentally on guinea-pigs.

Comparatively little has been added to our knowledge of the systemic actions of emetin in mammals during the past few years, and the descriptions in recent text books of toxicology are much like those given by Lewin in 1888.

The following statement is based largely on the statements of Kunkel¹ and von Jaksch.²

Emetin is an active local irritant, causing inflammation, and even ulceration of the tissues with which it comes into contact in sufficient concentration. When powdered ipecac is handled, it may give rise to irritation of the eyes and even ulceration of the cornea, and cause burning in the mouth and throat. The inhalation of the powder causes a sense of oppression in the chest and difficulty in respiration (so-called emetin asthma).

The application of an ointment containing emetin or ipecac to the skin causes irritation, progressing to pustulation with the continued application of strong preparations.

The subcutaneous injection of emetin causes pain, swelling and even ulceration.

Emesis following the oral administration is generally attributed to the local irritant action on the gastric mucous membrane; if emesis fails to occur and emetin passes into the intestine, it gives rise to diarrhea, and this may be bloody, the latter effect being augmented by the extreme dilation of the intestinal vessels. If absorption occurs, systemic effects follow.

The systemic effects observed after the entrance of emetin into the blood stream include general depression with failure of respiration, due to paralysis of the center, and cardiac failure due to the direct action of the emetin on the heart and circulation. There is a profound fall of blood pressure because of the cardiac and vascular effects.

The central nervous system undergoes rapid depression and paralysis even in the frog, which is not immediately killed by removal of the heart. Emetin stops the mammalian heart in diastole.

Alterations in the blood have been described; these are attributed to the accumulation of acid products of metabolism, but they are not responsible for the effects just described.

Kunkel describes the effects of toxic doses of from 50 to 100 mg. per kilogram of body weight in the cat and dog, but the results of experiments performed in the laboratory of the writer (unpublished) show that as little as 2 mg. of emetin per kilogram administered intravenously may cause some depression at times, while doses of from 8 to 12 mg. per kilogram cause general depression with weakened and accelerated heart and lowered blood pressure. There is an apparent improvement after a short time, but usually these doses are fatal within forty-eight hours. The effects of the oral administration of emetin in solution are about like those seen after intravenous injection, but

1. Kunkel: *Handbuch der Toxicologie*, 1901, p. 841.

2. Von Jaksch: *Die Vergiftungen*, Ed. 2, 1910, p. 493.