mass, projecting from the thorax at the right edge of the middle of the sternum. This was about $2\frac{1}{2}$ inches in height and 3 inches in diameter at the base. The apex showed a subcutaneous hemorrhage which rapidly increased in extent until it was the size of a silver half-dollar. The extreme summit of this area was of a deep reddish color and presented a glazed appearance. An expansile pulsation was both visible and palpable, extending for a considerable distance beyond the base of the mass. There was an absence of thrill, tracheal tugging and episternal pulsation. A systolic murmur or bruit was heard at the second aortic interspace during inspiration only. This was transmitted into the vessels of the neck, but was not audible over the elevation. The heart was apparently neither enlarged nor displaced. The heart sounds at the apex were somewhat rapid and rather weak; the second aortic sound, however, was moderately accentuated. The lungs were normal, except for a slight congestion of the lower portion of the left lung.

The pupils were equal and reacted to light, accommodation and convergence.

Estimation of the blood pressure in both radials showed the right to be: Systolic, 130 mm. Hg; left, 125 mm. Hg. Later the difference was more marked, viz.: Right, 120 mm.; left, 100 mm.

An *x-ray* examination, made by Dr. Pfahler immediately after the patient entered the hospital showed an aneurism extending $3\frac{1}{2}$ inches to the right of the median line on a level with the third rib and also approximately $2\frac{1}{2}$ inches upward and downward from this level. The upper portion of the aneurismal shadow just overlapped the origin of the aorta.

The blood showed a slight grade of secondary anemia; the coagulation-time was $3\frac{1}{2}$ minutes; later (June 7) this was reduced to 2 minutes.

Treatment.—A modification of Tufnell's diet was used. Breakfast, a soft boiled egg and two ounces of bread; dinner, three ounces of meat and two ounces of toasted bread; supper, milk toast. Between meals he was allowed four ounces of milk every three hours, but no other fluid. Later a small quantity of stewed fruit was added to the diet.

The medicinal treatment consisted chiefly in the use of tincture of aconite m. iii, every three hours, gradually reduced to m. ii three times a day, and a saturated solution of potassium iodid m. v twice daily, increased m. i daily, until the dose became m. l, three times a day, when the patient developed symptoms of iodism; it was now reduced to m. xxx, which amount was maintained during his entire stay in the hospital.

Codein sulphate gr. $\frac{1}{8}$ was administered by mouth when necessary to control the troublesome cough. He was also given magnesium sulphate in doses sufficient to keep the bowel movements in a fluid state.

The patient's condition did not improve and the aneurism was in imminent danger of rupture. On January 29, therefore, it was decided after consultation to resort to more radical measures. Accordingly, one of us (Dr. Mann) inserted into the aneurismal sac about ten yards of fine silver and copper wire. Almost immediately the expansile pulsation was markedly diminished and the tumor-mass was less prominent. The wire could be distinctly felt, giving the impression of subcutaneous emphysema. About two weeks later, an additional slight elevation above the second rib, and to the right of the sternum, was visible. This also gave an expansile pulsation.

The second eminence slowly increased in size and on February 13 Dr. Mann inserted several yards of fine silver wire. At this time the pulsation in the original mass was not apparent. In a few days the pulsations in the second elevation were less marked and a considerable diminution in its size was noticed. On February 28 the entire upper surface of the primary tumor-mass sloughed off, exposing the wire coiled up within the aneurismal sac. Beneath the wire, which admirably fulfilled the purpose for which it was intended, a firm granulating surface was visible.

As the result of the formation of this granulation tissue and the progressive retraction of the sac, the wire was stead-

ily protruded from the wound and small portions were removed each day until little remained. The coils of wire which had been passed through the sternal opening, however, were not removed. For a long time after the mass had disappeared, there was a slight oozing of blood from the wound. A small hemorrhage occurred June 16, about two ounces of blood being lost.

On July 1 the patient first sat up. The wound now slowly healed by granulation. A slight pulsation over the second elevation was still present. The patient's strength gradually returned and on July 17, the wound meanwhile having healed, he was discharged from the hospital.

SUPPLEMENTAL REPORT BY DR. MANN.

The aneurism was first wired Jan. 29, 1907, at which time and continuously thereafter, careful precautions to insure asepsis were maintained. With a hollow needle of sufficient caliber to admit freely the passage of No. 26 silver wire, the tumor was punctured near the base of the portion external to the sternum.

About thirty feet of wire was passed through the needle, which was directed toward different areas of the sac in order to distribute the coils better and also to block the opening in the sternum. The sternal aperture, as discovered by a radiograph, had a diameter of about three-fourths of an inch and was located in the lower half of the gladiolus. Pulsation almost entirely subsided soon after the wire had been introduced.

About two weeks subsequent to the first wiring, that is on Feb. 13, 1907, a small area of pulsation appeared in front of the sternum just above the original tumor. This second sac was filled with seven feet of wire, after which and up to Jan. 15, 1908, there has been only feeble pulsation and no extension of the parts wired.

Results.—The patient has been seen at intervals of one to two months since he left the institution, and has continued symptom-free with the exception of slight dyspnea on active physical exertion. Certain physical signs of the aneurism are, however, still present, namely, very slight bulging over site of upper elevation, feeble pulsation (slightly expansile) over same area, and a small abnormal field of dulness above and to the right of the normal cardiac dulness and slight accentuation of the second aortic sound. No bruit can be detected, however, a small, shallow dark red protuberance covering an area about the size of an ordinary coat button appeared about Feb. 6, 1908. This small projecting mass exhibited an expansile pulsation. An *x-ray* examination made this day showed no perceptible increase in the size of the saccular aneurisms situated to the right of the sternum when compared with the results obtained by the same method six months previously. The aneurismal dilatation of the transverse portion of the arch, however, had extended itself to a slight extent, although it had given rise neither to symptoms nor to physical signs.

By March 10, 1908, the small protuberance, which appeared on February 6, 1908, had entirely disappeared as the result of rest.

A PRECAUTION TO BE OBSERVED IN MAKING THE USUAL GMELIN TEST FOR BILE IN THE URINE.*

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In the performance of the usual Gmelin test for bile in the urine the nitrous acid necessary for the oxidation of the biliverdin is obtained in various ways. It has been our custom—and this method has been used elsewhere—to instruct the student to heat concentrated nitric acid with a few pieces of the wood of matches,

* From the Clinical Laboratory of the Northwestern University Medical School.

and to heat until the fumes of the nitrogen oxids arise faintly, in this way furnishing the mixture of nitric and nitrous acids. The acid is then poured into another clean, dry test tube and, after superimposing the urine on the slightly yellow nitric acid, the usual play of colors is looked for.

An error in interpretation, not of the presence of bile, but of the presence of albumin, in the urine is remotely possible after this manipulation. In practically every test made in this way a distinct white ring can be seen between the urine and the acid in nonalbuminous urines after the lapse of less than a minute, often at once. This ring, which is practically always just below or associated with the normal brown ring, is sometimes so dense and sharp that under some conditions, remembering the usual Heller's test for albumin, a faulty conclusion respecting the albumin content of a urine may be made. Heating the acid alone to boiling will never give the same result, and the white ring in question is probably precipitated resin dissolved from the wood by the nitric acid. This resin can not be removed by ordinary means. Benzin will not remove it completely, or will give a cloud at the juncture of the urine and the acid after its removal from the benzin. Alcohol is impracticable, for it mixes with the acid. Consequently, the ring will be present after making nitrous acid in this way and it becomes necessary to heed the warning.

The same care in diagnosis in this test, relative to the presence of albumin, must be taken as in the interpretation of the presence of albumin in urines containing resins, from copaiba, etc., when making the Heller's test for albumin. In the latter instance the white ring is usually high, that is, above the junction line of the nitric acid and the urine, for it comes from the urine. The position of the ring in the test for bile by yellow nitric acid made as described above is low, the resin being precipitated from the acid, and this location of the ring is of importance in putting one on one's guard.

When one remembers how hastily some clinical tests of urine are made, this precaution, I believe, is of practical importance. One always hesitates to announce such a simple error as this, but in none of the usual text-books on clinical diagnosis has any mention of it been found. Other methods of producing the nitrous and nitric acid mixture may be used, as, for instance, by heating nitric acid with starch, by adding a nitrite to the acid, or by exposing the acid for a long time to the air, but none of these is so easy of application or so rapid of execution as the one by the use of the wood of matches.

CASE OF ACUTE MASTOIDITIS WITH SOME UNUSUAL FEATURES.*

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The interesting and uncommon features present in this case I believe warrant its recital.

Patient.—Mrs. S., 65 years of age; a widow; domestic by occupation; was admitted to the hospital Nov. 30, 1907.

History.—Patient's family history is negative. Three years ago she suffered from an attack of pneumonia, followed by an acute purulent otitis media in the right ear, from which she eventually completely recovered. Nov. 3, 1907, she was confined to bed with an attack of influenza, and almost immediately an acute otitis media made itself apparent in the left

ear. The tympanic membrane ruptured of its own accord, and soon a purulent discharge was noticed. At first there was little pain, but gradually the pain became more severe in character and extended over the region of the mastoid process. This condition was allowed to go on for two weeks, when the pain, temperature and deafness made the patient so miserable that she finally sought relief, and was at once admitted to the hospital.

Examination.—Patient appeared well nourished and rather corpulent. She seemed to be a very sick woman. The lungs showed a mild degree of emphysema. The heart was hypertrophic and the second sound was very much accentuated. The urine showed granular casts and the presence of albumin. The specific gravity was 1.018. Abdomen, extremities and reflexes were normal. The cranial nerves were perfect. The eyes responded to light and accommodation. There was no nystagmus. The fundus of both eyes showed nothing abnormal.

Ears: The tympanic membrane of the right ear was slightly retracted. The hearing function was normal for ordinary purposes. In the left ear only loud conversation was heard close to the ear. Whisper could not be heard at all. Weber was lateralized toward the left ear. Rinne was negative. Bone conduction was good. High-note tuning forks were appreciated somewhat better than the lower notes. There was a mild degree of edema over the mastoid process. The whole region was extremely sensitive to pressure, especially at the tip and posterior border. The canal was very much narrowed by the sagging of the upper wall. There was some secretion in the canal. The perforation in the tympanic membrane could not be seen. The drum was reddened and bulging and its anatomic landmarks were no longer recognizable. The patient complained bitterly of pain both in the ear and back of the ear, and of some headache. The temperature on admission was 101 F. There was no history of a chill, sweating, nausea, vomiting or vertigo.

Examination of the secretion showed pneumococci. Examination of the blood showed 18,000 leucocytes and 80 per cent. of these were polymuclears. Operation was advised at once and accepted.

Operation.—Division of the soft parts showed nothing unusual. On chiseling the mastoid, immediate entrance was made into a cavity filled with pus, broken down cells and granulation tissue. Although the opening was made close to the suprameatal region, I came down directly on the lateral sinus, which in this patient unfortunately was lying far forward, within three-eighths of an inch from the posterior wall of the external meatus. By working slowly and carefully I was able to preserve the posterior wall and enter the antrum. The whole mastoid process was cleaned out and the tip resected. As the sinus appeared healthy and distinct pulsation was noticed, it was not interfered with. The wound was packed, a dressing and bandage applied, and the patient was put to bed. For the next forty-eight hours the result of the operation appeared to be entirely satisfactory.

On the evening of the third day after the operation the patient passed a restless night and complained of headache and pain over the left side of the head. The temperature rose to 102.2 F. and the pulse rate was 70. Physical examination proved negative. An examination of the fundus in both eyes showed a slight blurring of the discs. The patient was given calomel. For the next forty-eight hours she appeared to be improving, her temperature not going above 100 degrees. Suddenly, on the morning of the sixth day, the patient began to complain of severe headache, the temperature gradually rose to 105 F. and the pulse dropped to 60. There was neither chill nor vomiting. A blood count showed 15,000 leucocytes, with 76 per cent. of polymuclears. Physical examination proved negative. The fundus in both eyes showed a marked choked disc. The mentality of the patient was good, and there was not the slightest sign of delirium. She complained bitterly of her headache. A serous meningitis was at once suspected, the reasons for this suspicion being the intense headache without other cranial symptoms, the choked discs, the rather slow pulse, with a temperature of 105 F. It was

* Reported at the Otological Section, New York Academy of Medicine, February, 1908.