

ranted in bringing it more prominently to the attention of the profession. The technic of its application is still simpler than that of the Skelton stain so highly recommended by Hayhurst² recently. The stain is prepared as follows:

a, A 1 per cent. solution of methylene blue (Höchst, medicinally pure) in pure methyl alcohol, and b, A 1 per cent. solution of eosin (Grübler, pure) in pure methyl alcohol are kept on hand. Equal parts of a and b are mixed, and the stain is ready for immediate use. This is a saturated solution of the stain and I have found it better to dilute this with one-quarter to one-half its volume of methyl alcohol. It is also advisable to make up only enough of the mixed stain to last four or five weeks as it is needed, on account of the evaporation of the alcohol which will take place if the stock solution is frequently opened. If kept corked, however, the mixed stain keeps indefinitely, one sample which I made more than four years ago being as good to-day as the day it was made. Especial stress must be laid on the purity of the ingredients, particularly the methylene blue.

I recommend that only the Höchst, medicinally pure, be used. This can always be had from E. Leitz, Chicago and New York, if not elsewhere. The ordinary brands of methylene blue do not give good results. Merck's methyl alcohol, the brand marked "Highest Purity," has proved entirely satisfactory and is easily obtainable; the ordinary methyl alcohol must not be used. The bottles must be chemically clean and dry before using, and must be kept tightly stoppered.

TECHNIC

The stain is particularly adapted for cover-glass preparations. For staining blood the film should be thin, even, air-dried, and preferably not more than twenty-four hours old. No heat fixation is necessary. The cover-slip, held in a good cover-glass forceps, is flooded with the stain by means of an ordinary medicine-dropper. This dropper should be kept separate, and should not be washed. The stain is allowed to act for one-half to one minute and is then slowly washed off with distilled water added drop by drop, preferably with another dropper kept aside for the purpose. If a deeper stain is desired, (and I prefer this second technic) the stain should be allowed to act for one minute, then five drops of distilled water added, and this allowed to stand for two or three minutes, and then washed with distilled water. The film should be stained pink. Under the microscope the red cells appear pink, the nuclei deep blue, the neutrophile granules light pink, the eosinophile granules deep pink or bright red, the basophile granules a deep purple, the blood platelets a light blue, malaria plasmodia and bacteria blue. Polychromatophilic stippling is very well shown.

For staining pus, throat smears, sputum, and other exudates the stain should not be allowed to act more than one minute. It is an excellent stain for the gonococcus and the ordinary pus cocci. For staining the diphtheria bacillus I have long ago discarded the Loeffler's blue in favor of this stain. The stain should act from one-half to one minute and shows the metachromatic granules most beautifully.

I can most heartily recommend this stain for all ordinary routine blood work, and for most of the other

usual stained preparations. No other stain which I know of is so simple in preparation and application, gives such uniformly good results, and has such a wide range of usefulness.

A CASE OF BRADYPNEA IN ADVANCED PULMONARY TUBERCULOSIS

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History.—The patient, M. H., aged 18, single, was a clerk. His uncle died of lung trouble over thirty years before. The patient was never very strong, but considered himself healthy. He had had a cough for five winters, and steadily for a year past. The cough was worse since an attack of the grip six months before the patient was seen by me. He had typhoid for eleven weeks two years before he was seen. He was seen for the first time May 5, 1908. His chief complaint was anorexia. He had cough, expectoration (2 ounces), moderate dyspnea, occasional palpitation of heart, no hemoptysis or night sweats.

Examination.—His weight was 133 pounds (138 a year previously), his height 5 feet 11 inches. (He had grown one foot in five years). His temperature was 100.5, pulse 104, respirations 10 to 12. He appeared a little childish for his age, his emaciation was marked, his chest long and flat, expansion poor. The heart showed marked accentuation of second pulmonic sound, otherwise normal. The lungs were extensively involved, practically all of the left lung being involved; also the right upper lobe, part of the middle lobe, and the upper part of the lower lobe. There was a small cavity at the right apex and a large cavity in the left upper lobe.

Course of Disease.—The patient improved temporarily. In September he developed an ischiorectal abscess, which ruptured. The urine about this time was acid; specific gravity 1010; considerable albumin; no diazo reaction; no sugar; many leucocytes; a few dark granular casts and a few epithelial cells. Four days before death the pulse was 112, respirations 13. The patient was remarkably free from pain in chest or abdomen. There were no signs of meningitis. Practically the only drugs used were strychnin, creosote and iodine (locally). The patient died Nov. 13, 1908. No autopsy was obtained.

Respiration.—The respiratory rate per minute out of eight times recorded by myself during the last six and one-half months of the patient's life was 10 once, 11 once, 12 three times, 13 twice, and over 20 once. The respirations were regular, quiet, slow, fairly deep, and unaccompanied with any effort or strain. The patient's mother kept records of the respirations during the last three months of his life, 165 in all. She was intelligent, careful, somewhat familiar with hospital work, and her recorded respiratory rates averaged a little higher than my own. Her and my records together made 173, divided as follows: Respiratory rate per minute: 10, 1 time; 11, 2 times; 12, 41 times; 13, 20 times; 14, 81 times; 15, 22 times; 16, 4 times; 17, 1 time; over 20, 1 time. The rate ranged from 10 to 17, with only one exception. It never rose above 15 with but six exceptions. It was below 15 145 times (83.8 per cent.). The afternoon and evening rates averaged a little higher than the morning rates. The temperature was usually low in the morning, often rising later in the day to 100 or 102.5. The pulse varied between 104 and 132.

Hutchinson gives the normal respiratory rate as 16 to 24. Bradypnea or a diminished respiratory rate has been noted in some forms of cerebral disease, including meningitis, in affections involving the pneumogastric nerves, in respiratory obstruction, in some forms of bronchitis, in asthma, in emphysema, and in nephritis, none of which appear to have been the cause of the lessened respiratory rate in our case.

Out of 1,438 occasions on which the respiratory rate was recorded in nine patients with advanced pulmonary tuberculosis during the last three months of life, on

2. Hayhurst, Emery R.: A Satisfactory Method for Staining Blood Smears, *THE JOURNAL A. M. A.*, April 3, 1909, III, 1100.

about two thirds the rate ranged between 25 and 34 inclusive, and only on one occasion was it below 20.

The only reference to diminished respiratory rate in pulmonary tuberculosis I have been able to find after looking over a number of standard works, is one by Smith¹ in 1856. In an elaborate study of five cases of pulmonary tuberculosis he found the respiratory rate as low as 13, and speaks of the bad prognosis in cases with low respiratory pulse rates, like 1:7 or 1:8. He noticed the low rates chiefly in phthisical persons of unusual stature, as in some of the regiments of the life guards, and in the early stage. Possibly, the bradypnea in this case and the height and rapid growth may have been due to a common cause. No other cause suggests itself, the condition resembling many cases of advanced pulmonary tuberculosis.

This patient had advanced pulmonary tuberculosis and yet the bradypnea was practically always present during the last six months of life, the rate frequently being below 13 and reaching as low as 10. The respiratory-pulse ratio was low, reaching below 1:10.

MIXED TUMOR OF ADRENAL ORIGIN CONTAINING OSSEOUS TISSUE

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Patient. Mrs. D., aged 24, American, housewife, had four sisters and two brothers, all in good health. The family history was negative. With the exception of the usual diseases of childhood the patient had always been in good health. She had three children, the youngest was two and one-half months old.

Present Trouble.—About seven weeks before the examination the patient first noticed an enlargement in the left hypochondriac region. About three weeks later she began to have some pain in her side and back, which did not seem to be getting worse. The growth, according to the patient, had not increased in size and the only pain the patient had now was in the back.

General Examination.—A tumor mass was readily palpated in the left hypochondriac region; this extended several finger-breadths below the free border of the ribs and to the median line in front. There was very little pain on pressure; the tumor was of hard elastic consistency; there was tympany over median border of tumor. When the patient lay on the back a distinct tympany could be percussed over the tumor. The mass extended through to the back and could be palpated from the rear and pushed forward and the entire mass seemed slightly smaller than a child's head. Distention of the colon did not help to clear up the condition. The mass was freely movable with respiration. When the patient stood it was possible to palpate between the upper pole of the tumor and the border of the ribs. Otherwise examination of the abdomen was negative. On vaginal examination the uterus was normal, anteverted and movable. The right adnexa could be palpated and were apparently somewhat thickened.

Urine Examination.—Light straw, sp. g. 1025, alkaline reaction, no sugar, trace of albumin, microscopically, many pus cells, a few red cells and an occasional cast could be seen. Second examination, same as the first, with the exception of the presence of sugar, which could be accounted for by the fact that the patient was nursing a child.

The patient again made application for treatment four weeks later. An x-ray plate made at this time showed a shadow, which was taken to be a stone in the pelvis of the kidney. Since patient was last seen the tumor had increased in size until now it extended beyond the median line.

Clinical Diagnosis.—Kidney tumor, probably hydronephrosis.

Operation.—By Dr. Max W. Myer. Oblique lumbar incision, tumor and kidney exposed, attempt to trocar failed. In the delivery of the tumor mass, which was very difficult owing to size and solidity, the tumor tore and yellowish bloody contents escaped. It was necessary to resect the last rib to deliver the mass.

Postoperative History.—The patient recovered from the operation, left the hospital in two weeks. To date, six months after operation, there are no signs of return.

*Pathologic Report.*¹—The specimen was a tumor mass about the size of two fists, with a thick, fibrous capsule covering it, except at the lower pole, from which yellowish pulpy material protruded. When sectioned the tumor presented difficulty because of osseous or calcareous substance in the capsule, processes of which extended quite deep into the tumor mass. The cut surface presented a variegated appearance; canary yellow areas, which were taken to be the tumor substance proper; red areas, which were thought to be due to hemorrhage; and the substance so resistant to the knife which was calcareous material or possibly true bone. The starch-iodin reaction of Crofton was positive.

Microscopic Examination of Tumor.—Pieces from various parts of the tumor were taken; those from the most resistant parts were placed in nitric acid solution before being blocked. The various slides showed many variations in the microscopic pictures. The cells were much the same, large and clear, with a very large vesicular nucleus, which took a bright, clear stain. The nuclei varied greatly in size. In some areas these cells were massed together without any particular arrangement, while in others they were to be found only in strands or cords, usually double cords of cells. In other places there was distinct tubular formation, with the tubules filled with red blood cells. Many of the lining cells of the tubules were filled with pigment in the form of very minute granules and of a yellowish-brown color. The pigment was of hematogenous origin and reacted to Pearl's iron stain. Some cells gave evidence that fat had been dissolved out of them. The blood vessels, really sinuses or capillaries, were very thin-walled. The tissue, which was placed in nitric acid solution, showed, when stained by Schmorl's method, typical osseous structure. There was definite formation of laminae and canaliculae, and the bone substance took a yellowish-brown stain.

Pathologic Diagnosis of Tumor.—Osteohypernephroma, or better, osteomesothelioma.

Microscopic Examination of Kidney.—The accompanying kidney, which was markedly smaller than normal, firm and quite resistant to the knife, showed on microscopic examination distended tubules, many of which contained large hyaline casts; and great increase in the interstitial connective tissue.

Pathologic Diagnosis of Kidney Condition.—Fibrocystic kidney, atrophy from pressure.

We wish to express our thanks to Dr. Myer for permission to report the case.

ASPHYXIATION FROM GASOLINE FUMES

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Several cases of asphyxiation in buildings where gasoline engines were being run have come to my attention lately, and I have not come across any reports of such conditions in my limited library or in medical journals.

CASE 1.—The operator of a gasoline fire engine was working in the engine house with the engine running and all doors open. After an hour or so he felt dizzy and fell to the floor, unconscious. There was marked pallor and body was covered with cold perspiration. The breathing was slightly stertorous. The eyes were closed, the pupils slightly dilated. The pulse remained full, regular and at normal rate. The patient winced on pressure at the supraorbital notch but remained unconscious for five hours. He felt weak and had a splitting headache for a

1. Edward Smith, *Medico-Chirurgical Trans.*, published by the Royal Medical and Chirurgical Society of London, vol. 39.

1. From the Pathological Laboratory, University of Missouri.