should in general be limited to 4 or 5 c.c.; injection should immediately cease if pain in groin or rectum occurs, since such pain shows irritation of vas or vesicle, sometimes requiring mitigation by morphin. If the vas be occluded by stricture, severe pain may be caused by the injection of even 1 or 2 c.c. Regurgitation of collargol into the connective tissue around the opening in the vas follows overdilatation, and causes a tender induration which gradually subsides, usually without suppuration.

If there be no occlusion of the seminal duct, collargol is passed with the urine for days following the injection, and the emitted semen is black—the latter phenomenon inspired in one patient the fear that his future children might be Ethiopians. When the weaker, non-irritating solutions are used at body temperature, the distended vas and vesicle may expel their contents into the urethra and bladder or even out of the meatus, so that a stream of black liquid flows from the syringe of the operator through the entire genital duct, escaping at the meatus. In these cases the opening of the ejaculatory duct into the prostatic urethra can usually be identified through a modern urethroscope, and a filiform bougie be passed into the duct.

By fastening into the vas a flanged silver tube the injection or irrigation may be repeated subsequently at the discretion of the operator.

Among the features revealed by this method are: (1) a peristalsis of ampulla and vesicle into the prostatic urethra, without the phenomena of emission—a function which explains certain obscure clinical phenomena; (2) the sphincteric closure of ampulla and vesicle; (3) the not infrequent occlusion of the ejaculatory duct, converting vas and vesicle into a retention cyst. Elaboration of these and other features exceeds the limits of this preliminary article, which is designed to bring this new means of studying the genital duct to the attention of the profession.

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TWO UNCOMMON ESOPHAGEAL CASES

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The first case is of interest in showing the length of time that a large and irregular-shaped foreign body can be retained in the esophagus, the conclusions arrived at as to the safest procedure for its removal, and the operation.

CASE 1.—J. S. (referred by Dr. Harry Landesman, New York), aged 34, married, machine worker in factory, whose family and personal history were negative, had been perfectly well up to nine weeks before I saw him, when, during his sleep one night, he was awakened by a strangling sensation and a pain in his throat. Within a moment he noticed that the right incisor tooth of the upper jaw, with the plate on which it was attached, was missing. He made efforts with his fingers to extract the plate from his throat but could not feel it. After an hour or two the symptoms of distress subsided and he fell asleep again. When he awoke in the morning his throat was sore, swollen and "reddish looking," and he had indefinite painful sensations in the upper part of his neck in the lateral hyoid regions. For two days he could not swallow anything. About the third day he began to get down some fluid, and each day thereafter he swallowed with less

distress until, at the time I saw him (eight weeks after), he was partaking of fluid and semisolid foods. The patient had no pain under ordinary conditions, but when he made effort at swallowing he had a sticking sensation in the lateral hyoid regions high in the front of his neck, but no distress in the sternal region. This distress he described as the presence of something interfering with his swallowing. Dr. Landesman reported that he had passed a bougie several times into the patient's stomach, and had not noticed any obstruction, and the patient stated that he had examined his stools for the first four weeks and had not recovered the plate.

Fig. 1.—Anteroposterior skiagraph showing the plate lodged at the level of the third and fourth dorsal vertebrae, and the clavicles in front (Case 1).

Fig. 2.—Slightly lateral position showing the plate lodged at the same level as shown in Figure 1 (Case 1).

Examination was negative, except that the patient had a slight degree of pharyngitis. The tip of a stomach-tube was arrested about the upper part of the sternal region. I did not pass a bougie, feeling that if the plate was lodged there it might cause a rupture of the esophagus. The patient described the tooth-plate as having one tooth fastened to it; it had a lower cutting edge and an upper edge which was flattened and sharp. He said that the plate was made of rubber, and originally had a clamp at both ends to hold it to certain teeth, but that one of these clamps had been broken off for some time. (The lower end of the plate as seen in

Figure 1 shows this perfect end to be pointed downward.) He said that the plate was a narrow one, was pointed at both ends, and had a sharp posterior edge. The two skiagrams (Figs. 1 and 2) show the shadow to be considerably wider than the description of the plate he gave and more irregular in outline than only such a plate would throw. My assumption was that he probably had some ulceration in the esophagus around it accounting for this.

While it would be an easy matter to pass an esophagoscope and seize the plate with an esophagus clamp, it is evident that the plate would have to be seized at the point where the edge was noted through the esophagoscope, there being little or no choice in the selection. The entire assemblage, that is, the esophagoscope and the clamp with the plate fastened at its lower end, would then be delivered by simple direct traction. Since the laryngopharyngeal junction is narrow, and a third skiagram showed that the tooth-plate was in the position which when drawn upward had the two sharp edges of the tooth on one side and the knife edge of the back of the plate on the other, it was plain that the opening of the esophagus

was also found necessary in order to have a good exposure to divide the omohyoid. The thyroid gland and the trachea were then retracted to the right. The carotid sheath was next identified and retracted to the left. An esophageal bougie was then passed. At a point as deep in the neck as possible, the esophagus was seized with volsellum forceps and a longitudinal slit made over the bougie. The bougie was then withdrawn and the finger inserted into the esophageal wound. The plate was located apparently opposite the second costosternal junction, its base directed upward with the angle on the left side firmly imbedded in the esophagus. This projecting angle was broken off and removed with a pair of forceps, after which the plate was readily extracted. The wound was then lightly packed with gauze and patient returned to bed. For nine days the patient was nourished by rectum and kept sitting up in bed, and dressings were changed daily. On the tenth day the patient was given liquids by mouth and, there being no escape through the esophageal wound, nourishment continued to be given this way. His convalescence was uneventful in every way."

Fig. 3.—Anteroposterior skiagram showing calcification of the arch of the aorta, and other calcareous masses in the lungs (Case 2).

Fig. 4.—Dorsolateral skiagram showing pressure on the esophagus by the arch of the aorta at A, pressure on the esophagus by the base of the heart at B, and a retention in the esophagus between the two points, and bismuth in the stomach at C (Case 2).

would probably be badly cut in delivering the plate, thereby encouraging the danger of a cellulitis of the throat with a possible edema of the glottis. Since the main danger of its removal was a subsequent cellulitis, I decided that this would be minimized to the greatest extent by not endeavoring to remove the plate by the esophagoscope but by an open operation at the side of the neck. This was done one week afterward. Two days before it was performed, the patient began to complain of pains in his right and left thorax, mainly in the right shoulder running down the arm, which pains prevented him from sleeping.

Description of the operation by Dr. J. P. Grant at Dr. J. A. Wyeth's clinic, at the New York Polyclinic Hospital: "The patient was placed on the table with shoulders slightly elevated and face turned to the right. On the left side an incision was made, beginning at the level of the thyroid cartilage and extending downward along the anterior margin of the left sternomastoid for about three inches. The skin, platysma, and superficial and deep fasciae were divided. It

The second case is of interest in showing a type of esophageal obstruction which has not been recognized as yet and which accounted for a peculiar swallowing symptom.

CASE 2.—Mr. C. H. S. (referred by Dr. Stephen Lee, East Orange, N. J.), aged 78, married, manufacturer, family history negative, at the age of 30 noticed a swelling in the root of his neck on the right side. This was diagnosed by Dr. Willard Parker and Dr. Sands as an aneurysm of the subclavian artery for which nothing was done, and the growth has not enlarged in the last forty-eight years. The patient took exceptionally good care of himself in the way of diet, exercise, sleep, etc.

About five years ago he noticed a stinging and distressing sensation in the right chest when he swallowed acid food or drink. This was particularly noticeable when he drank lemon-

ade or ate stewed tomatoes. This stinging sensation, when prominent, gave him flashes of distress down the left arm. He stated that he had no distress excepting when he partook of acid things, and then only for from five to ten minutes after he had swallowed, that partaking of these acid things did not cause him distress in the stomach, and that such distress as he had was entirely substernal.

Examination revealed a tall, thin type of man with an aneurysm of the second portion of the subclavian artery on the right side of the size of a small peach. No radial pulse was palpable on the right side. Blood-pressure, systolic, 186; diastolic, 100. Distinct atheroma of the right brachial. Urine contained increased amounts of indican, no albumin or casts. The heart was enlarged, and the aortic sound accentuated. There was general atony of the hollow viscera of the abdomen, and the second swallowing sound delayed to 30 seconds.

While the diagnoses of senility, aneurysm of the right subclavian artery, chronic excessive intestinal putrefaction of the indolic type, and arteriosclerosis, with gastro-enteric atony were possible, the main point in this connection was the interesting symptoms pertaining to swallowing. The supposition first was that the patient probably had an aneurysm in the arch of the aorta, although no physical signs suggested this. The diagnosis of the cause of the swallowing symptom was made and confirmed by x-ray (Figs. 3 and 4).

It is therefore plain that this man had a calcification of the aorta; the pressure on the gullet at that area caused by this calcification, and a pressure exerted on the esophagus by the upper part of the base of the heart, together caused a slight delay in transit in this portion of the tube. When the food or drink was of an acid nature, it irritated the mucous membrane of the esophagus at this midportion, and the patient had the symptoms described, which subsided in a few minutes when the contents in the esophagus had been delivered into the stomach.

THE PREVENTION OF ARTERIOSCLEROSIS AND HEART DISEASE IN OTHERWISE HEALTHY INDIVIDUALS PAST MIDDLE LIFE *

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Every observing person whose experience extends past 40 knows that heart disease is constantly developing among his contemporaries who are otherwise healthy. Surprise is often expressed that this man or that, in spite of what seemed to be right living, has become a victim of heart disease.

The slightest consideration leads to the belief that there is some active or hidden agent working to cause heart disease and hardening of the arteries, and a little examination shows that the causes are not those usually assigned. The healthy old drunkard disproves alcohol as a cause. Rheumatism more often attacks the young, and in later life generally spares the heart and blood-vessels. Men who really overwork are not so numerous as is often thought, and worry, while a great cause of heart disease, is indirect in its effect.

The fact is constantly appearing in the literature of the day that circulatory disease, as shown by statistics, is more frequent than formerly. Tuberculosis has for its victims the most attractive of the youth of the land, but heart disease claims the best and most successful of those past middle life. Much attention is being directed to tuberculosis because its cause and progress have

become matters of public knowledge. The victims of heart disease, however, still too often go for months and years without intelligent treatment because no one has pointed out the danger-signals and because the interest in germ disease has absorbed every one's attention.

Heart disease and hardening of the arteries in nine times out of ten are, I believe, due to disturbances of the chemistry of the body. The prevention of heart disease and hardening of the arteries must be accomplished by a proper regulation of the chemistry of the body, particularly that pertaining to the intestines and the liver. This is accomplished through diet, rest and exercise, through the administration of certain well-defined remedies, and the limitation of nervous strain, than which nothing is more potent to upset the bodily chemistry. The technical chemistry involved is difficult and complicated in the extreme, and entirely beyond the comprehension of those not specially trained in the chemistry of this particular branch of work.

The truth is not found in popular explanations with such trite names as "intestinal fermentation," but in the ultimate chemistry of food substances and their changes in the human body.

The tendency to heart disease in otherwise healthy individuals past middle life can better be detected by a chemical examination of the urine than by an examination of the heart itself. By the time the heart itself shows poisoning, as appreciated by the sufferer because of palpitation, pain or shortness of breath, irretrievable damage has been done, and the chemical vice has become so deeply seated that an extreme regimen is necessary, while in the early stages a slight modification of diet and hygiene can check the trouble.

It is often remarked that the consumptive is fortunate who early in his disease has a severe hemorrhage that thoroughly convinces him of the necessity of treatment. In the beginning, heart disease and hardening of the arteries unfortunately have no symptoms, and the changes in the organs themselves are such as can be detected only by the most expert examination. Fortunate is the subject of these changes if the disturbing chemistry of the body leads to pronounced suffering in the direction of recurrent headache, biliousness or dyspepsia before the heart and blood-vessels are damaged, because these things may lead to treatment and prevention.

The prevention of heart disease and arteriosclerosis in otherwise healthy persons past middle life can be accomplished infallibly only when there is a periodic chemical examination of the bodily chemistry at stated intervals by an expert chemist, and when early and proper courses of treatment counteract the tendency before damage is done.

Some of the large life-insurance companies are now examining for this underlying chemical cause of heart disease in otherwise healthy persons who apply for large policies, and yet one of the saddest examples that I ever witnessed of chemical damage to the heart and blood-vessels was the case of the medical officer of one of these very companies.

My conclusions are the result of a practice devoted exclusively to the practical care of heart patients, but I would urge on my colleagues who are privileged to do laboratory research work its vitally important bearing on the life and well-being of mankind at the most useful period of life. The prevention of arteriosclerosis and heart disease in otherwise healthy persons past middle life thus brings up a problem that is seldom considered. However much constant observation may tend to the

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