

fectly. By it we are forced to reverse our opinion as to the desirability of warming the gases and to appreciate that any heating appliance is not only unnecessary, but disadvantageous (provided it is efficient). The fourth requirement, that of lightness and portability, has since been worked out, and we will be able shortly to report an apparatus made of aluminum that collapses easily to a size and shape convenient to carry.

The object of this paper is to describe a face-piece or rubber collar that we have designed to meet our fifth requirement; namely, that of preventing air from leaking into the gaseous mixture between the face and the mask, while at the same time retaining the latter in place. It is a modification of the Gatch cuff.²

The collar is $2\frac{1}{2}$ inches wide with an upper circumference of 9 inches and a lower circumference of 12 inches. On the nasal part of the collar is vulcanized an extra piece of rubber $3\frac{1}{4}$ inches long to the upper and lower edges. To a point on the side $\frac{1}{2}$ inch distant (away from the nasal part) from the transverse diameter is vulcanized a rubber strap 14 inches long which contains at its distal part a series of nine holes 1 inch apart; to a corresponding point on the other side is vulcanized a tab carrying a hook designed to fit the holes of the strap. The smaller circumference of the collar slips over the celluloid part of the mask, which it tightly and firmly grasps.

Before applying it is explained to the patient that laughing gas does not produce any feeling of suffocation, but that to be effective as an anesthetic all air must be excluded. Then with the valves on the mask arranged so that the patient is breathing air the collar is carefully adjusted by slipping the lower part under the chin (including the beard if present) and the nasal part is then stretched up over the bridge of the nose. The strap and its opposite tab and hook are found lying on the angles of the jaw; the strap is passed behind the neck and hooked with moderate tension. The collar is now air-tight, except at the angle of the nose; to exclude air at this point one or two pieces of ether gauze are tucked in on either side between the two layers of rubber, thus pressing the inner layer tightly against the skin.

The collar is very quickly removed in case of an emergency (which seldom occurs); it can be readily readjusted. It causes no undesirable pressure on the vessels or nerves of the neck; even the veins are not compressed by the strap, as they are protected in front by the angle of the jaw and behind by the powerful neck muscles.

Occasionally the pressure of the collar across the bridge of the nose interferes with nasal breathing. This may be overcome by introducing soft rubber tubes about six inches long guarded by safety-pins through the nares into the oropharynx; or, which is easier, the patient may be allowed to breathe through the mouth, care being taken that the valve-like action of the lips on inspiration be prevented by placing a piece of gauze in the angle of the mouth.

Using this collar in conjunction with my apparatus, I have frequently exceeded twenty

minutes in which I neither changed a valve on the apparatus or touched the mask or the face of the patient, the latter being all the while in a state of ideal surgical anesthesia. Further, I have not seen a case, whether alcoholic or not, that has not run a smoother course than it would have done under any other anesthetic. Using an air-tight face-piece greatly reduces the cost of gas and oxygen; many cases use less than \$2 an hour while others more, depending on whether or not the patient stands considerable rebreathing. Excessive rebreathing increases the post-operative discomfort slightly, especially by causing headache. Therefore, unless there is particular reason to economize, I use about \$4 worth of gases.

REFERENCES.

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- Cotton and Boothby: Nitrous Oxide-Oxygen Anesthesia (New Apparatus). *Surg., Gynec. and Obst.*, 1912, xiv.
- ² Gatch: Nitrous Oxide-Oxygen Anesthesia by the Method of Rebreathing. *Jour. Am. Med. Assn.*, 1910, liv, no. 10, 775-780.

Clinical Department.

A CASE OF THROMBOSIS OF THE LEFT POSTERIOR INFERIOR CEREBELLAR ARTERY.*

BY J. W. COURTNEY, M.D., BOSTON.

UNDER the title, "Occlusion of the Posterior Inferior Cerebellar Artery, A Definite Symptom-Complex," Gordinier,¹ of Troy, has very recently published a report of three personally observed cases in which the occlusion (by thrombosis) was right-sided.

In his introductory remarks this author says: "It is astonishing that with a complex whose symptoms are so definite and exact one can find so few cases diagnosed and recorded in the literature.

"The first case of occlusion of the posterior inferior cerebellar artery recognized and reported in America was by Drs. Henry Hun and Ira Van Gieson in 1897. Since then but 4 cases have been reported in this country, 2 by H. M. Thomas in 1907 and 2 by Spiller in 1908. In England one case has been reported; 16 cases have been reported from Germany and 2 from France. . . ."

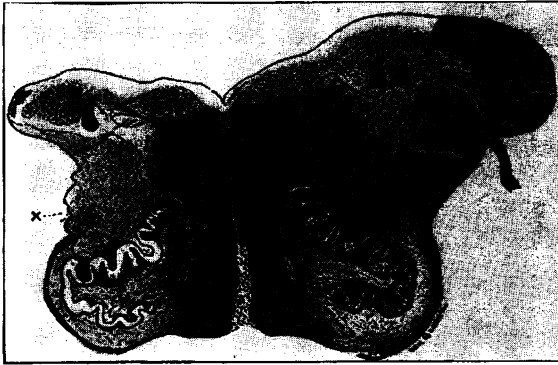
This poverty of the literature of the subject under consideration is my excuse for the present clinical contribution.

A glance at the anatomy of the posterior inferior cerebellar arteries shows that they are the longest branches of the vertebrals and have their origin from them opposite the lateral surfaces of the medulla oblongata near its middle portion or just about 2 cm. below their union to form the basilar. Each vessel passes outward and backward across the restiform body and between the pneumogastric and hypoglossal nerve roots; it then passes to the under surface of the cerebellum, where it divides into two branches, an internal or inferior vermiciform branch and an external or hemispherical

* Read before the Boston Society of Psychiatry and Neurology, Nov. 16, 1911.

¹ Albany Med. Ann., October, 1911, pp. 585-601. In the present report Dr. Courtney has borrowed freely from this excellent article of Dr. Gordinier and hereby acknowledges his indebtedness to that author.

branch. The inferior vermiform branch passes backward between the vermiform process and cerebellar hemisphere, supplies the vermiform process and anastomoses with the vessel of the opposite side and the superior vermiform, a branch of the superior cerebellar artery. The hemispherical branch is distributed to the under surface of the cerebellum and anastomoses with the middle and superior cerebellar arteries.



Area of softening in occlusion of the posterior inferior cerebellar artery.

Represents a section through the medulla oblongata in a plane corresponding to the upper vagus or glossopharyngeus roots, and two or three millimeters caudad to the plane of junction of the pons and medulla. The focus of softening is shown at X, and areas of degeneration are shown surrounding and within both olivary bodies. The section is not strictly transverse, the right side being slightly cephalad to the left. The anterior pyramids became detached from this section and are not represented. (Borrowed from Dr. Hun's article.)

As the inferior cerebellar artery winds around the medulla oblongata it gives off several terminal end-arteries which supply the lateral field of the formatio reticularis and restiform body. The anterior and median areas of the medulla oblongata are supplied by branches of the anterior spinal arteries and the olivary bodies by lateral branches from the vertebrals. Hence an occlusion confined to either one of the inferior cerebellar arteries would not injure the hypoglossal nuclei or other nuclei on the ventricular floor, the posterior longitudinal bundles, mesial fillet, anterior pyramids, or olivary bodies.

The cerebellum would be in nowise compromised because of the free anastomosis between this artery and its fellow of the opposite side, together with the superior and middle cerebellar arteries.

The area of softening in the lateral field of the medulla oblongata, as shown by the above-quoted authors, is sharply limited to the formatio reticularis grisea and restiform body and has a vertical extent from about the middle of the hypoglossal nucleus to the point where the restiform body passes into the cerebellum. Its greatest antero-posterior extent is from the dorsal blade of the lower olive to the restiform body.

The parts usually involved in this field of softening are the ventro-lateral ascending tract of Gowers; the direct cerebellar tract; the descending vestibular and trigeminal tracts; cerebello-olivary fibers; nucleus ambiguus, vasomotor and sympathetic fibers; and other fibers which pass via the restiform body. The auditory nuclei and nerves are occasionally involved, while

the facial and abducens are rarely implicated unless the thrombus extends into the vertebral.

The symptomatology, as worked out by Spiller and slightly modified by Gordinier, is as follows:

(1) Sudden onset without loss or disturbance of consciousness.

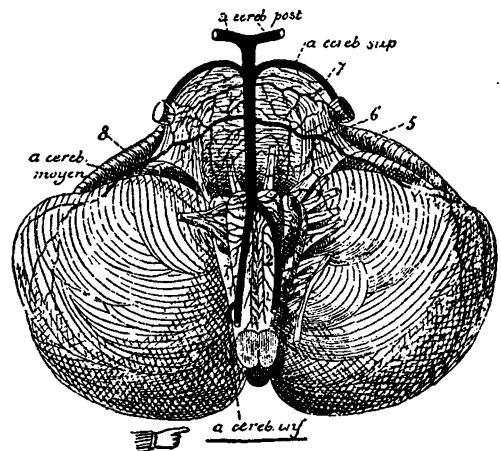
(2) No paralysis or paresis of the muscles of the extremities or the muscles innervated by the fifth nerve (owing to the motor paths contained in the ventral pyramids being supplied by the vertebrals and anterior spinal arteries, while the nucleus and axones of the motor fifth are nourished by the basilar).

(3) Diminution or loss of pain and temperature sensations in the limbs of the side opposite to the lesion, rarely also in the side of the face opposite to the lesion. Diminution or loss of sensation of pain and temperature in the distribution of the fifth nerve on the same side as the lesion (formatio reticularis grisea, Gower's tract, ventral fasciculus, descending trigeminal tract). Spontaneous pain, or some form of paresthesia in the area of disturbed objective sensation.

(4) Tactile sensation intact in all parts (median fillet not involved). Sense of position usually intact.

(5) Ataxia in the limbs corresponding to the side of the lesion (involvement of the direct cerebellar tract, restiform body and cerebello-olivary fibers, indicating that the fibers of co-ordination do not decussate below the medulla oblongata.

(6) Tendency to fall or sway toward the side of the lesion; tendency of the head to drop toward the side of the lesion (restiform body).



Arteries of the anterior surface of the pons and medulla. (After Duret.)

a. cereb. post.: Posterior cerebral artery. a. cereb. sup.: Superior cerebellar artery. a. cereb. moyen.: Middle cerebellar artery. a. cereb. inf.: Inferior cerebellar artery.

1. Root-arteries of spinal accessory nerve. 2. Anterior spinal artery. 3. Root-arteries of pneumogastric nerve. 4. Root-arteries of glossopharyngeal nerve. 5. Root-arteries of the oculomotor nerve. 6. Root-arteries of the facial and acoustic nerves. 7. Root-arteries of the trigeminal nerve. 8. Root arteries of hypoglossal nerve.

(7) Nystagmus bilateral, more intense when eyes are directed toward the side of the lesion (Deiter's nucleus?).

(8) Ménière's symptom-complex, vertigo, revolving vertigo, auditory hallucinations, vomiting,

deafness on side of lesion (Dieter's nucleus, vestibular nerve and nucleus, cochlear and vagus nerves).

(9) Paralysis of the muscles of deglutition on the side of the lesion, but causing complete inability to swallow, with impaired sensation of pharynx. Paralysis of soft palate on the side of the lesion, vocal cord immobile in cadaveric position, voice hoarse, and speaking is in a whisper (loss of phonation with preservation of articulation). (Nucleus ambiguus and vagus.)

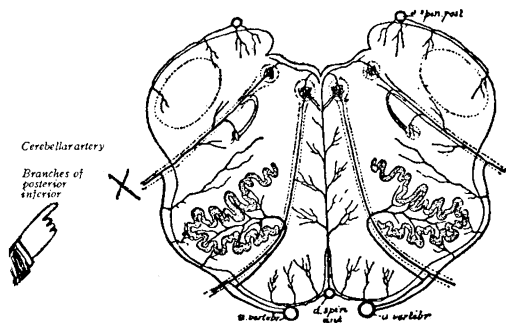


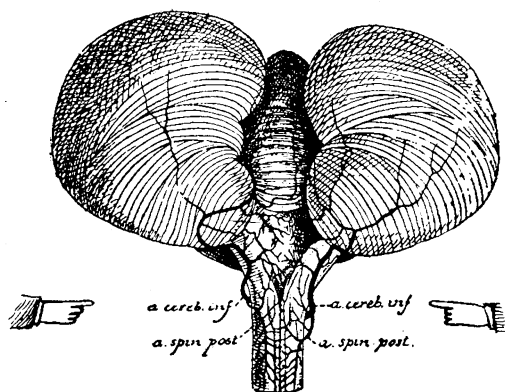
Diagram to show plan of distribution of the arteries of the medulla. (After Duret.)

a. spin. post.: Posterior spinal artery. a. verteb.: Vertebral artery.
a. spin. ant.: Anterior spinal artery.

(10) Tongue rarely a little weak on the side of the lesion, but weakness soon passes away, as the hypoglossus nerve and nucleus usually escape.

(11) Taste may be lost in anterior two thirds of tongue, although this is only an occasional symptom.

(12) If the sixth and seventh nerves are implicated it indicates an extension to the vertebral, as these nerves are not involved when the thrombus is confined to the posterior inferior cerebellar artery.



Arteries of the posterior surface of the medulla. (After Duret.)

a. cereb. inf.: Inferior cerebellar artery. a. spin. post.: Posterior spinal artery.

(13) Sympathetic disturbances on the side of the lesion (formatio reticularis grisea), smallness of the pupil, ptosis, narrowing of the palpebral fissure, retraction of the eyeball on the side of the lesion. Loss of sweating in the face on the side of the lesion, or increase of sweating in the face on the side opposite the lesion.

Hiccough, hemi-asymmetry on the side of the

lesion. Pulse may be rapid from paralysis of the vagus or slow from irritation of it.

(14) Reflexes not characteristic.

The case about to be shown is that of a married woman, aged forty-three, who presented herself for treatment at my clinic Sept. 17, 1911. She was referred from the medical department. The family history is unimportant. The patient herself has had no illness of moment up to the present, and has never been pregnant.

The onset of her trouble was as follows: On a certain Sunday in April of the present year she had been about the house as usual and had had a noon dinner, — consisting of roast pork, squash, and so forth, — which in no wise seemed to distress her.

About two o'clock in the afternoon she sat down to read. Suddenly she exclaimed: "Oh, papa, I feel awfully funny!"

This "funny" feeling was caused by a loud buzzing in the right ear and a dropping of the head forward on to the left side of the chest. All endeavor to hold the head erect was in vain.

The patient was perfectly conscious, and begged to be got to the door so that she might get air. She was assisted to the door, where she vomited projectily. On the way to the door she thinks she staggered.

She was then carried to bed. The vomiting, nausea and tinnitus passed away in a short time.

While in bed, a matter of about four weeks, she could not hold her head erect, the right side was somewhat weak, the left arm "trembled," both while at rest and on attempted movements, and the spinal muscles seemed inadequate to hold the back up. The entire right side felt as though there were a heavy weight upon it, and the patient could not feel the heat from a hot-water bottle anywhere on that side. The sensation on the left side was not disturbed.

The eyes are said to have been somewhat "turned" for a few days, but the sight was not affected and neither smell nor taste was disturbed.

On leaving the bed the patient could stand unsupported, but, on walking, swayed, she thinks, to the right. Her gait has continued unsteady and the same tendency to go to the right still manifests itself. There has been a decided gain in weight. Some time ago, the patient, on thrusting a hatpin through her hat, penetrated the scalp on the right side of the head, but was unaware of this fact until she saw blood from the wound.

Physical examination shows patient to be a well-developed and well-nourished woman. The gait is distinctly ataxic, with a tendency to go to the right. Marked swaying in the Romberg position, with tendency to fall to the right. Intelligence normal. Voice rather reedy and tremulous. The palpebral fissures and the eye-bulbs are alike on the two sides. The facial and ocular muscles are normal. The tongue is without tremor, but deviates slightly to the left. The pupils are regular in outline, the right being somewhat larger than the left. Both react normally to tests of light and distance. The field of vision is normal. Upward and outward movements of both eye-bulbs are accompanied by slight nystagmoid movements. There is a suggestion of arcus senilis on the upper rim of both irides. There is no evidence of paralysis or paresis of any limb. There is marked inco-ordination of the left upper extremity; none on right. The tendon and periosteal reflexes are alike on the two sides. The heart area is normal. The aortic second sound is increased, but there are no souffles anywhere. In the lower extremities the deep reflexes are lively and equal, but there is no ankle clonus and no Babinski. On the left side all forms of sensation are absolutely normal. On the right, includ-

ing face and scalp, tactile sensibility, while preserved, is apparently not as keen as on the left, the pain sense is markedly blunted, heat is somewhat perceived as such, while cold, when felt at all, is felt as warmth. The joint and posture sense is normal on both sides. The urine has a specific gravity of 1,020 and contains neither sugar nor albumen.

The case herewith presented departs in certain unimportant respects from the symptomatology laid down by previous observers. On the whole, however, it is a striking example of the semeiologic complex which accompanies occlusion of the posterior inferior cerebellar artery and, as such, it seems to the writer to be worthy of record.

A CASE OF A BUTLER WHO KILLED HIS THREE CHILDREN.*

BY G. L. WALTON, M.D., BOSTON.

THIS case is reported as a striking illustration of two facts: First, that a single examination does not always disclose the mental condition of a homicide; and, second, that the academic knowledge of right and wrong is an inadequate measure of criminal responsibility.

On May 3, 1911, T. H., aged thirty-seven, killed his three children by placing near them in bed the end of a tube leading from the gas jet. During the day he went to see friends, seemed downcast, cried, told what he had done and told others they could have his things after he was dead. He apparently drank some during the day after the deed, but was not in the habit of drinking to excess. The children were found as he had said, and he was arrested. Shortly after his confinement in the jail, on his brother's coming to see him, he became excited and shouted, "Take him away." At other times he was quiet and orderly, nothing special being noted except that he appeared to take his situation with indifference. Dr. Cowles and myself having been requested by the court to report on his mental condition, we made three examinations and interviewed a number of witnesses. From the testimony regarding his previous condition, nothing definite was elicited. It appeared that he was very fond of his children, that he was always quiet and orderly, of kindly disposition, very simple-minded, in some ways rather childish, for example, he would laugh inordinately at a joke, but was generally reticent; was an exemplary servant, acting as butler and indoor man. He had lost his wife sometime prior to the crime and had placed his children in a home. He had, however, shortly before it, taken them out and set up housekeeping in an apartment. He was expecting to be married again. He lost his position through the death of his employer, was disappointed that she left him no money and was also disappointed in his marriage expectations.

Examination showed a small man with no special marks of deviation. He answered all questions freely, though in a rather monosyllabic manner, showed moderate education, good apprehension within a limited scope and good memory. The association test revealed nothing except that the choice of response was rudimentary and involved predicates rather than substantives; thus: chair, to sit in. He described the whole incident freely and naturally, describing going into the room from time to time and watching one after another of the children cease to breathe. He stated

* Read before the Boston Society of Psychiatry and Neurology, Nov. 16, 1911.

that he had made the same attempt twice before, but that they had awakened and called him, upon which he had turned off the gas. Asked if he were not sorry, said he thought nothing about it. Asked if he did not know it was against the law, said Yes. Asked if thought he ought to have done it, said he didn't think at all about it. Asked if he did not wish they were back, said they were better off where they were. These answers were given in a smiling and pleasant manner without agitation.

The second examination was like the first until nearing its close, and bid fair to reveal nothing more definite, leaving us with an impression that we had not reached the bottom of the case, but not furnishing sufficient evidence to report him as mentally unsound. Finally, however, upon continuous and persistent questioning by Dr. Cowles regarding his reason for not wanting to see his brother, he suddenly became violently excited, gesticulated and shouted that he would kill his brother on sight, that he would kill the sisters because they had not taken better care of his children, that he had a right to kill his children because every one had a right to do what he thought best with his own. The question being interjected whether he did not know it was against the law, he denounced the law in a violent and profane manner, and said that the law had nothing to do with the right of a person to do what he wished with his own. This attack of excitement passed off quickly and he returned to his former mental attitude, helped us on with our coats and comported himself as a quiet and well-trained servant.

At the third examination he appeared as at the first, but when asked about his belief regarding his right to kill the sisters, his brother and his children, he stated without any excitement that he held the same views.

We reported that he was of unsound mind and likely always to be a dangerous member of society on account of these beliefs. He was committed to Bridgewater.

At the next meeting Dr. Cowles will discuss the genesis of the condition.

Medical Progress.

REPORT ON OBSTETRICS.

BY ROBERT L. DE NORMANDIE, M.D., BOSTON.

PHYSIOLOGICAL STANDARDIZATION OF ERGOT.
BLOOD-PRESSURE INDEX OF ECLAMPSIA.
IS THE HIGH FORCEPS OPERATION A MODERN SURGICAL PROCEDURE?
DIAGNOSIS AND PROPHYLAXIS OF THE TOXEMIA OF PREGNANCY.
HYDROSTATIC BAGS IN BREECH PRESENTATIONS.
A RAPID METHOD OF HEALING ABSCESSSES OF THE BREAST.
DIAGNOSIS AND TREATMENT OF CONTRACTED PELVIS.
ABDOMINAL DELIVERY IN OBSTETRIC SURGERY.
RETRACTION RING AS A CAUSE OF OBSTRUCTION IN LABOR.

PHYSIOLOGICAL STANDARDIZATION OF ERGOT.

THE importance of the standardization of ergot is again shown by this monograph. As interesting and important as is Edmunds' and Hale's¹ historical review of the subject, their experimental work, the physiological methods of investigation used, there is not space in this review to more than mention. The reader is referred to the original bulletin, a copy of which may be obtained from the Surgeon-General of the United States Public Health and Marine-Hospital Service. The important part of the bulletin to physicians is the report on the strength of ergot