radial arrangement closely simulating that seen in real gall-stones. This radial arrangement was produced by chilling a molten mass of cholesterol and lecithin contained in a glass ball. The apparent lamellation of gall-stones was produced by a phenomenon of colloidal chemistry known as "Liesegang's rings." The authors conclude that neither the radial arrangement of the crystals in gall-stones, nor the apparent lamellation, necessarily prove that gall-stones grow from a central nucleus.

THE SURGICAL ASPECT OF BLOOD DYSCRASIAS

DOCTOR JOHN SPEESE pronounced the *Annual Oration,* being a paper entitled *The Surgical Aspect of Blood Dyscrasies.*

Stated Meeting Held May 3, 1926

The President, DR. CHARLES F. MITCHELL, in the Chair

INTRACRANIAL DIVISION OF GLOSSO-PHARYNGEAL NERVE COMBINED WITH CERVICAL RHIZOTOMY FOR PAIN IN INOPERABLE CARCINOMA OF THE THROAT

DOCTOR TEMPLE FAY reported the case of a woman, aged forty-one years, who had been under treatment for nine months for primary carcinoma of the tongue and soft palate on the left. For three months she had had extreme pain, deep in the ear, behind the ear and in the throat. Two months before, a spheno-palatine injection relieved slightly the pain in the ear, but as the growth extended there was extreme pain, constant in character, situated over the left mastoid, behind the ear, and a great degree of difficulty in swallowing, with pain, so much so that she was unable to secure sufficient nutrition. Radiation treatments produced reactions causing severe pain to such an extent, that the patient required two grains of morphine a day in addition to allinol. There is a palpable mass in the left submaxillary region and below the left ear.

In view of the pain deep in the ear and its exacerbation on swallowing, as well as the pain in the cervical distribution, a combined cervical rhizotomy and intracranial section of the ninth nerve was undertaken on the left. The operative procedure was made possible by rectal anæsthesia, which proved sufficient to maintain a complete anæsthesia throughout the entire procedure.

The preparation of the surgical field, so as to include the ninth and upper cervical posterior roots, was accomplished by a midline incision, so as to expose the upper three cervical laminæ. After removal of the atlas, axis and part of the third cervical lamina, the upper cord was disclosed and then an incision was made at right angles to the midline incision, carrying it well to the left and almost to the mastoid, at a point sufficiently below the superior occipital ridge to avoid injury to the occipital artery, and at a level of about the lower hair line of the neck. The skin and muscles were sectioned in one block. The upper flap was then freed from its attachment to the occipital bone and then turned outward toward the ear. The occipital bone was then removed over the left cerebellar hemisphere, as far out as the ridge of the mastoid and below, along the margin of the foramen magnum, to the point of entry of the vertebral artery. A small portion of bone was removed to the right of the midline. This disclosed the dura, covering the left side of the posterior fossa and the upper three inches of its prolongation down into the spinal canal.

The dural incision, which was devised for this procedure, consisted of a fishhook-shaped opening, beginning just to the left of the midline over the upper cervical cord, extending through the circular sinus, at the level of the foramen magnum, just to the left of its bifurcation, so as to avoid the occipital sinus and obviate the necessity of ligating this structure. The incision was then carried up parallel to the occipital sinus, almost to the upper margin of the bony opening, when by a curved semicircular incision, it was carried to the left and down toward the mastoid. The dural flap was then opened, and retracted toward the left shoulder. A careful dissection of the dura from the arachnoid permitted no escape of spinal fluid. It was then possible to see the structures beneath the transparent arachnoid, and to trace by means of the spinal portion of the eleventh nerve, its course, as it proceeded upward to enter the jugular foramen. At its point of emergence, it was noted that it was immediately joined by the tenth nerve on the left, composed of several fan-shaped filaments. Just above this a small structure about the size of a match stick was recognized as the glosso-pharyngeal, also making its emergence at this point. This required elevation of the left cerebellar hemisphere, by means of a lighted retractor, and when the ninth nerve was isolated, the arachnoid was punctured, the nerve secured upon a hook and avulsed. During this moment, the anæsthetist noted a drop in the pulse rate from 125 to 80. Probably due to vagus irritation. A small amount of spinal fluid escaped through the puncture of the arachnoid, but was checked when the cerebellar hemisphere returned to its normal position. The upper two cervical roots were then isolated, crushed and destroyed, silk ligatures being placed about each. The operation was done almost entirely extra-arachnoid, and no bleeding from the outer wound reached the sub-arachnoid space.

The dura was carefully closed and muscles approximated carefully in layers. The patient made an uneventful post-operative recovery. The stitches were removed on the eighth day, the wound healing by first intention. The relief of pain was marked in this case. The patient no longer required morphine. The pain behind the ear completely disappeared and painful paroxysms, associated with swallowing, were also absent.

There was anæsthesia over the left posterior aspect of the scalp, below the ear, and a disturbance for pain sense even under the angle of the jaw anteriorly. The left side of the soft palate and pharynx was also anæsthetic. For the past two weeks, she has noted twinges of pain, referred to the lower jaw and into the teeth on the left, as well as sharp, shooting pains in the left ear anteriorly, and in the region of the distribution of the third division of the fifth. This will require alcoholic injection to insure complete anæsthesia in the field of the growth which has extended now so as to involve the trigeminal distribution.

The patient has been able to resume her eating, she has gained twelve pounds in weight, and is now able to continue with her radiation treatments for the condition.

It is of interest to note the nerve supply in the region of the ear. Now that it has been possible to remove the sensory supply of the fifth, ninth and cervical nerves, there still remains an area which retains sensation. This must be therefore from either the seventh or tenth.

The case is unique in the combination of cervical and glosso-pharyngeal destruction. It offers a means of further application of this type of surgery to similar conditions involving the distribution of the ninth and cervical nerves. The exposure is one which readily discloses the cerebello-pontile angle and can be accomplished, extra-arachnoid with all the post-operative

benefits from excluding blood from the subarachnoid space. The muscle section of this character in the neck is as advantageous for exposure as section of the ribbon muscles and sternocleidomastoid in cases of thyroidectomy.

The case is one of seven from his series of cervical rhizotomy, but the only one in which the ninth nerve was included, with destruction of the upper cervical posterior roots.

DOCTOR CHARLES H. FRAZIER said that this question of performing palliative operations on patients with inoperable carcinoma of the face and mouth is one of great magnitude. Contrary to prevailing thought, morphia is not the last word in the relief of pain and particularly so in malignant disease. The dose must be increased almost from day to day until the maximum gives little satisfaction. Meanwhile the patient's morale is lowered, he becomes demoralized, and Doctor Pancoast, in the Radiotherapy Department of the University Hospital, has had difficulty in sustaining the patient's courage sufficiently to ensure regular attendance. About three years ago he first advocated operations on the trigeminal tract in inoperable lesions of the face and mouth, and especially in carcinoma of the tongue were the results gratifying.

But he soon found, when there was secondary involvement of the cervical lymph-nodes, which in fact is the rule rather than the exception, that there was almost as much, and as distressing pain in the distribution of the cervical plexus. The pain is often referred to the back of the head and may be much more distressing than that in the trigeminal zone. On his service at the University Hospital, Doctor Grant and Doctor Fay, in an attempt to control pain not of trigeminal origin, tried the effect of cervical rhizotomy in a series of patients. In some the results were beyond expectation; the patients were quite transformed from miserable morphine addicts to a reasonable state of expectancy and freedom from pain. In two of the series the relief was not complete, but this may have been due to the extension of the disease and involvement of other sensory nerves. Still he is quite convinced that the results of rhizotomy justify the undertaking.

DOCTOR FAY'S report of an operation for the relief of pain referred to the glosso-pharyngeal nerve reminded him of a similar operation once proposed for the relief of so-called glosso-pharyngeal neuralgia. The latter has always seemed more or less of a myth. In over 1200 cases of neuralgia about the face, he has never seen one which would fit into this category.

Finally as to the technic which Doctor Fay has employed. A unilateral craniectomy should be sufficient merely for the intracranial division of the ninth cranial nerve. Years ago with this method he found it quite feasible to expose and divide the auditory nerve at its entrance to the internal auditory meatus. Speaking more particularly, with regard to the means of exposing the suboccipital region and exposing the structures of the posterior fossa, in the Neurosurgical Clinic of the University Hospital in the fall of 1925, he adopted a modification of the so-called crossbow incision that proved eminently satisfactory. With the exception of a two- or three-centimetre cross-cut at the upper end of the major incision, merely for the convenience of ventricular puncture, only a vertical incision is made in the midline. If

the interfascial plane is followed the incision is practically bloodless. To give more ample exposure of one or the other cerebellar hemisphere, the muscle mass is bisected subcutaneously on one side, sufficiently low to avoid cutting the occipital artery. Since the adoption of this technic in cerebellar explorations, under local anæsthesia, the time of operation has been shortened, the operation is almost bloodless and can be completed with surprising freedom from any serious effect upon pulse or blood-pressure.

DOCTOR A. P. C. ASHHURST said that he saw this patient before and after operation. The condition is certainly vastly improved. The gain of twelve pounds in weight is sufficient evidence. But there are some patients who are in no condition to stand an operation of this kind, which may take two, three, four or five hours. He had one such patient last winter with a recurrence in the neck from an epithelioma of the lip. The recurrence was ulcerating and open and on the point of causing secondary hemorrhage. Morphine was given with no relief. The patient was awake most of the night and all day long, rocking himself in the bed in agony. Not knowing what else to do and that an operation such as rhizotomy could not be done because of the proximity of the sloughing area and the feebleness of the patient he injected alcohol in the paravertebral region, aiming to hit the upper cervical nerves. He did not have much confidence in its effect, but the next day found that the patient had slept through the night without morphine. He died of secondary hemorrhage a few days later, but he had had some comfort and relief. This procedure should be considered as a possible treatment in desperate cases.

DOCTOR TEMPLE FAY said that the operation required five hours. The patient was operated on entirely under rectal anæsthesia, and was completely unconscious three out of the five hours. She just became conscious as the final sutures were put in place.

As to the procedure outlined by Doctor Ashhurst, that is alcoholic injection of the cervical nerves, he had seen it used in the thoracic region, but not in the cervical region. He has had no experience with it and has always had a great deal of fear of encountering the vertebral artery, which lies close to the point of injection.

One patient out of the seven died ten days following operation from pneumonia.

TOTAL THYROIDECTOMY WITH TRANSIENT RECURRENT LARYNGEAL PARALYSIS

DOCTOR IRVIN M. BOYKIN presented a woman, aged thirty-nine years, who was admitted to the Episcopal Hospital in the service of Doctor Ashhurst, September 9, 1925, complaining of a swelling of the neck and shortness of breath. The swelling was of twenty years' duration, but had rapidly increased in size during the past few months. With this increase in size there was associated shortness of breath and heart fluttering. The woman was a fairly well-nourished negress. There was no exophthalmos. Occupying the anterior and lateral aspect of the neck was a large lobulated mass, pendulous in its middle portion, and covering the upper part of the sternum.

The circumference of the neck was 65 cm. The physical examination was otherwise negative.

September 26, after more than two weeks rest in bed, a total extirpation of the thyroid was done under morphine and local anæsthesia. It was found that the gland extended substernally and in freeing the left lobe the pleura was opened; this was closed immediately. The isthmus was found densely adherent to the trachea and larynx and was freed with great difficulty. At this stage of the operation a little ether was given, as the patient could not stand tugging on the trachea. The right parathyroid gland was not found. The left was recognized and preserved.

Microscopically, the general appearance of the gland was that of cystic colloid goitre, with no evidence of malignancy.

Immediately following operation it was noticed that the patient was very dyspnœic and unable to speak above a whisper. For the first 48 hours convalescence was stormy and it was thought that a tracheotomy would have to be done. Laryngoscopic examination showed both vocal cords to be paralyzed. At the end of 48 hours the patient began to improve slowly and after two weeks was permitted to go home. Laryngoscopic examination five months later showed the vocal cords well-defined, approximation imperfect in the centre, lagging most apparent on the left side. The patient is able to speak quite well at the present time.

SARCOMA OF THE PROSTATE GLAND

Doctor Boykin reported the case of a boy, aged four years, who was admitted to the Episcopal Hospital in the service of Doctor Ashhurst, November 11, 1925, with a greatly distended bladder and unable to void. His parents stated that fifteen days prior to admission the child began to cry with pain in the abdomen, at the same time they noticed that he tried frequently to urinate and could pass but little urine.

On admission a No. 13 French catheter was passed. In passing the catheter an obstruction in the posterior urethra was encountered but overcome, 48 ounces of urine were withdrawn.

The physical examination made at this time was negative except for distention and tenderness over the lower abdomen; no rectal examination was made on admission. One week later, during which time the patient had been relieved by catheterization, it was noticed that the perineum was bulging; there was a reddened, slightly tender mass just to the left of the raphé. Rectal examination at this time revealed a mass about the size of a hen's egg in the region of the prostate. A cystogram and urethrogram done at this time showed a deviation of the urethra to the right. On December 5 an incision was made in the perineum. A bistoury was then passed into the mass. On finding no pus a finger was inserted and a few pieces of tissue resembling brain tissue were removed. The perineal incision was enlarged and the mass enucleated. The urethra was purposely not opened. The wound was packed with iodoform gauze to control bleeding.

Microscopic examination of tissue showed a sarcoma of the mixed-cell type, the round cells predominating in certain areas and spindle cells in others.

The patient did well following operation, voided freely and had normal bowel movements daily. Twenty-six days after operation, a rectal examination was made and a large firm mass was found extending from the perineum to a point as far up as the finger could reach. Patient now began having trouble voiding and could not defecate without use of enemata.

January 16, under ether anæsthesia, the perineum was reopened and a large mass of tissue removed from around the posterior urethra and base of

bladder. Bleeding was very free and controlled with difficulty, the posterior urethra and vesical neck were opened and the bladder and perineum packed with iodoform gauze. The patient left the operating room in shock, and died two hours later.

Microscopic examination of the second specimen removed was identical with that of the first.

ETHER-OIL COLONIC ANÆSTHESIA

DOCTOR ROBERT H. IVY and HILDA MELCHING, R.N., read a paper with the above title.

STABILIZATION OF PARALYTIC TALIPER VARUS

DOCTOR FRANCIS S. CHAMBERS read a paper with the above title.

POST-OPERATIVE SPREADING—SUPERFICIAL GANGRENE

DOCTOR EMORY G. ALEXANDER reported the case of a man, aged fifty-three years, who was admitted to the Episcopal Hospital, December 23, 1924, with definite symptoms of appendiceal abscess with a history of twelve days' development.

At operation, a friable gangrenous appendix was removed from an abscess cavity near the brim of the pelvis. Pus cultures, staphylococcus. Wound closed with three cigarette drains. Severe infection of the wound edges followed, for which the wound was reopened and packed with iodoform gauze. The appearance of the area exposed closely resembled that of a carbuncle. No tendency to healing appeared during the next few weeks, despite irrigations twice daily. The infection spread through the subcutaneous fat layer, producing a progressive red indurated area about the wound, which area subsequently broke down. In spite of the employment of mercurochrome, autogenous vaccine, horse serum and the removal of sloughs, the process continued to extend. Cautery excision was advised but the patient refused. An ischio-rectal abscess developed after which the temperature fell to 99° F. and the general condition showed some slight improvement.

March 27, wound culture showed presence of staphylococcus epidermis, staphylococcus tetragenus, micrococcus buccalis, streptococcus hæmolyticus; blood culture presented micrococcus liquefaciens.

The ulcer continued to spread about four millimetres a day. Dressings of dichloramin-T failed to check the progress.

April 20, the wound was irrigated with normal salt solution. The necrotic tissue was cut away, the fragments washed away with normal saline and arkase placed around the edges of the wound.

May 20, the arkase was discontinued, and the wound was then irrigated with a weak solution of iodine. The ulceration continued to spread one-third of the way down the thigh.

June 15, direct sun rays were tried with one-half hour exposures, and gradually increased to two hours at a time.

July 1, wet dressings of phenol and bichloride were tried. A slight improvement followed. The sun treatment had now to be discontinued as it seemed to act as an irritant. Sterile milk (prepared in the hospital laboratory) was given to provide a foreign protein. Then Aolin's milk in 5 c.c. ampoules was prescribed, the first ampoule being given, hypodermically, on August 8.

August 15 there seemed to be less odor about the wound since the application of wet dressings. The Aolin milk was continued, several times a week,

and was followed each time by a slight decrease in temperature. The dose was then reduced on August 25 to one ampoule a week. The general condition began to improve, although the necrotic process went right on, but the ulcerated area behind the necrosis seemed to look better. Local dressings were continued and a 10 per cent. solution of silver nitrate solution was applied locally to the gangrenous margin instead of a 4 per cent. solution of salicylic acid which was being used until then.

October 15, 1925. The sun-ray treatment was tried again, but had to be stopped because of the irritating effect, but the patient for the last month has been able to be up and about in the hospital grounds in a wheel chair.

FIG. 1.—Doctor Alexander's case of post-operative spreading superficial gangrene.

Aolin's milk seemed to have acted favorably in stimulating his resistance. The necrotic process continued downward and on September 30 had reached to within 8 cm. of the knee. The temperature now rose to only about 99° F. each day.

October 10, there was quite a violent reaction from the Aolin's milk which was being given every seven days. Within the next ten days the necrotic process seemed to be less rapid, healing in the destroyed tissue appeared to be more prompt and epidermis was beginning to appear in places; the necrosis seemed to show signs of arrest, having reached a point on a level with the inferior border of the patella. The temperature had been normal for two weeks. Local treatment was continued, but Aolin's milk was discontinued. October 20 the infection seemed to have died out. From November 5 on improvement progressed without interruption and on November 18 the patient was discharged in good condition, being able to get about in a wheel chair. The operative wound was entirely healed. Islands of granulation covered the areas of the skin, destruction of which extended from the operative wound downward and lateralward to the anterior superior spine, over the crest of the

ileum, and down the thigh to the inferior extremity of the patella. Between these islands of granulation some few crusts were still present, but granulation was progressing. The area over the knee healed much more rapidly and thoroughly than elsewhere. The wet dressings were continued in order to facilitate the removal of the crusts and to prevent an accumulation of pus under them, and a possible reinfection.

March, 1926, the patient has entirely recovered.

The reporter added that the gangrene of the fat and skin seemed to travel in waves with periods of exacerbation of ten days, followed by more or less quiescent state of from ten days to two weeks.

The gangrenous process never involved the median side of the wound, but traveled laterally from the incision to the anterior superior spine over the crest of the ilium, down the thigh on its anterior and lateral aspects as far as the head of the fibula. (See Fig. 1.)

There never was any sign of a fecal fistula nor was there any sugar in the urine to account for the process, although on admission the blood sugar was somewhat above normal, the blood Wassermann test was negative.

The recovery took place after the infection seemed to have burned itself out which, however, was a matter of ten months.

ALKALOSIS

DOCTOR FREDERICK A. BOTHE read a paper with the above title.

In response to questions he added that jejunostomy is performed in cases that do not respond to medical treatment, though abdominal distention is not present, because it not only affords a means of tiding the patient over, but also establishes drainage of toxic substances which are thought to be present in the upper gastro-intestinal tract.

Acidosis differs from alkalosis clinically in that the patients are more toxic and the air hunger syndrome becomes quite pronounced. The CO_2 combining power is lowered in acidosis and acetone bodies are found in the urine, whereas in alkalosis the CO_2 combining power is elevated and the urinary findings are those of renal damage. The blood chlorides do not fall in acidosis as they do in alkalosis.

All the primary operations were performed under general anæsthesia.

The etiology of alkalosis is not known. It is still a disputed question whether the toxæmia with the resulting alkalosis is due to a definite toxin or to toxic substances which are formed in the extensive protein destruction.

CYSTS OF THE OMENTUM

DOCTOR WILLIAM J. RYAN read a paper with the above title.