learned. None were excluded who, I was at all sure, had taken the medicine, excepting a few who were too stupid to give intelligible answers. Besides the cases recorded, I have probably given it in as many more, from whom nothing could be learned, as they did not return a second time. It is fair to presume that these cases also received the average benefit, or they would have reappeared.

I have previously used extensively salicylate and bicarbonate of sodium both internally and locally. I have used the combination of chlorate of potash with tr. ferri chlor. in many cases. In a few cases I have used the benzoate of sodium. Occasionally I have only given astringent and chloral hydrate gurgles. In all methods of treatment, of course, the bowels were kept open with salines or calomel. My experience with guaiac is not sufficient to allow me to judge personally of its merits. As far as my observation goes, I should rank it after salicylate of sodium. Many claim it to be a specific, but its intensely disagreeable taste and its irritating effect on the stomach, and, in my hands, its uncertain action, make it in many respects an objectionable drug. Of course, my results from other methods have not been tabulated with care, but none of them have ever been so favorable as those indicated in these tables. Occasionally, as before said, salol fails utterly, but in a small proportion of cases.

In conclusion, I cannot do better than translate Gouguenheim’s summary, with which I fully agree:

1. Salol acts beneficially in acute anginas of whatever cause.
2. It quiets the pain and dysphagia with the greatest rapidity.
3. In quieting the pain it may shorten the duration of quinsy.
4. It lowers the temperature.
5. In nearly all cases it diminishes the duration of the angina.
6. In order to attain those results, the dose should not be less than four grammes (sixty grains) daily.

A CASE OF SPINA BIFIDA; OPERATION BY EXCISION; RECOVERY.

By J. C. Cockburn, M.D. (Harvard),

R. H. Male. Born September 11, 1889, of Scotch parents. Weight at birth, seven pounds. Both parents healthy, and of healthy families. No deficient development in any relative, on either paternal or maternal side, except in a sister of the child’s father, who, after having had scarlet fever when five years old, failed to develop greater size than a child of eight or ten years of age. This aunt is said to have been of good form, active, and apparently to have enjoyed good health until she reached the age of puberty.
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At this period, instead of developing into womanhood, she began to fail in health, and continued to do so until, at the age of twenty-five years, she died, never having menstruated. In this family, besides this babe, there were one boy and three girls, ranging from two to nine years of age, all in good health, and well developed. When the mother was about three months advanced in this pregnancy she slipped; falling backward, the lumbo-sacral portion of the back came forcibly in contact with a board in the pathway. For a week or ten days following this she experienced a peculiar sensation within the pelvis, and directly beneath the seat of injury, to use her own expression, she felt as if a big lump had swollen upon the inside of her backbone, about where she was hurt by the fall. This sensation gradually passed away, and gestation went on without further incident to full term.

In confinement was attended by a midwife, and the labor was reported as normal.

The parents state that the babe was healthy, vigorous, and well developed at birth, except that over the sacrum was a soft tumor, resembling in shape and size the larger half or end of a hen's egg.

On November 12, 1889, I first saw the case, in consultation with Dr. T. H. Monahan. I found a healthy-looking, well-nourished babe, in size up to the average of infants of its age, and correspondingly bright and active. The tumor had attained a circumference of eight inches, was quite translucent over nearly its whole outer surface, and the skin covering it was, to appearance, thin, tightly stretched, red and shining, and about to ulcerate or rupture.

This tumor was but slightly reducible, and pressure on it elicited none of the nervous symptoms which are produced by pressure, such as muscular twitching, convulsive movements, drowsiness, nor had the parents ever noticed any of these symptoms, only a cry, or moan of pain, or distress, when pressed upon. The vigor and physical condition of the child gave promise of a favorable result from an operation, and I so advised.

To the parents were explained the almost inevitably fatal result of the case if left to itself; the great chance of death occurring during the operation, or quickly following it; and the reasonable chance of saving the life of the babe by operating. Grasping the situation at once, they readily agreed to and urged the operation.

Two days later, November 14, at 10 o'clock, a.m., assisted by Drs. Monahan and Tupper, I removed the tumor.

The operation was done aseptically. The little patient was put under chloroform, and then ether was administered carefully during the operation. Beginning at the superior portion of the tumor, an elliptical incision was made around it, keeping well back into the healthy skin, the inferior extremity of the incision coming well into the fissure of the nates. The dissection was slowly and carefully made down to the spinal column, which was readily reached, except at the inferior portion, where a dense fibrous band or mass connected the tumor to the sacrum. The opening in the spinal canal being reached, on all sides the pedicle of the tumor was separated from this dense fibrous band, and the latter cut through.

The tumor was found to emerge from an opening, about one-half or two-thirds of an inch in diameter, in the first vertebra of the sacrum,
resulting from imperfect development of its laminae. The pedicle was about one-half an inch in diameter, and closely filled this opening.

The hips were then raised and the tumor compressed, in order to return as much of the spinal fluid within the membranes of the spinal cord as possible, and a stout catgut ligature was now tied around the pedicle.

At the moment the ligature was tightened a sudden and rigid extension of the lower limbs took place, and also a marked change of the respiration. The audible breathing became silent, and but for the respiratory movement of the chest and abdomen might have been thought to have ceased. A trocar was thrust into the tumor, and three fluidounces of cerebro-spinal fluid were withdrawn; the sac was now cut open, and the cauda equina was found included in the ligature, and the extremity adherent to the dural lining of the sac.

With the hips elevated the ligature around the pedicle was quickly cut. This done the respiration soon became normal, and the other nervous symptoms rapidly abated. The caudal extremities were spread out fan-shaped at their attachment to the lining of the sac; these, with that portion of the dura to which they were attached, were hurriedly dissected from the sac, and an unsuccessful attempt made to return this mass within the spinal canal. The lumen of the pedicle would not admit this, and about three-fourths of an inch of the extremity of cauda, with the adherent dura, was excised. This fan-shaped extremity removed, the remaining portion was readily returned through the opening. Again the pedicle was ligatured and the patient's body replaced in a horizontal position. No nervous symptoms now occurring, after waiting long enough to feel certain that no spinal fluid was escaping, the sac was excised close to the ligature and the stump returned within the spinal canal. The wound was then closed by deep and superficial catgut sutures, and a braid catgut drainage left in the lower portion of the wound.

With aseptic gauze and absorbent cotton the wound was carefully dressed, and this dressing protected as much as possible by oiled silk and adhesive plaster to save it from being soiled by the feces and urine. The patient was now wrapped in warm blankets, and directions given to keep him warm, and to give only a little whiskey and warm water till evening. The little one rallied well from the anaesthetic, and during the night and next day was allowed to nurse but little. All went well until about 1 o'clock, p. m., the second day, when a convulsion came on. This did not last long. In half an hour the patient was conscious, observant, and bright again. Prescribed R.—Elix. pot. brom., f. j., Sig. five to ten drops every hour. Five drops of above were administered every hour, and no more convulsions occurred, though once or twice the parents thought the babe more nervous, and gave ten drops.

On the third day, November 16th, the temperature was normal and the dressing was removed, owing to its being soiled with feces. About three-fourths of the extent of the wound was united, the remainder looked well, with a slight serous discharge from the point where drainage was left, and midway between the extremities of the wound.

November 17. The dressing was not removed; patient doing well.

18th. The wound all united except a small opening at each of the points before referred to.

19th. Apparently doing well; dressing not removed.

20th. Found a slight elevation of temperature and some redness at
COCKBURN, A CASE OF SPINA BIFIDA.

the unhealed points; also found that the dressing had been more than usually soiled with urine and feces.

21st. Temperature 101° F., and the unhealed portion of wound appearing about as on previous day.

22d. Found a slight discharge of pus from the wound. Using a weak solution of carbolic acid the wound was well washed out, the fluid passing into one opening and out at the other, and then dressed with iodiform gauze. This treatment was continued until the 26th.

26th. Temperature normal, no pus, wound filling up and healthy in appearance.

28th. Doing well; opening nearly filled to surface.

29th. Temperature again above normal, patient not so well, though no change yet in wound.

30th. A. M. Found elevated temperature, a deep erysipelatous blush of wound and surrounding parts, and right leg very much swollen with considerable pain on moving it. Prescribed

B.—Quin. sulph. gr. xvi.
Yerbazin f 3j.—M.

Sig.—Half a teaspoonful every four hours.

Ordered wound to be freely bathed with a warm, weak solution of carbolic acid, and the following as a warm lotion to be kept continually on the swollen limb:

Tr. opii. : 
Liq. plumbi acetatis : 
: f 3j.—M.

December 1. The swelling of limb reduced, temperature lower, slight discharge of pus from the wound; general appearance better.

2d. Still improved.

3d. Temperature was found normal, but little swelling of leg, and but a trace of pus.

4d. No pus, no swelling of leg, and no pain on movement.

5th. Found the wound all healed except a small opening at inferior portion of wound. The patient had a better color and appeared to be gaining again.


16th. Found the little patient dressed, sitting on his mother’s lap playing, the wound smoothly and firmly healed, an apparent increase of flesh since last visit. Pronounced the case recovered.

February 11, 1890. To-day the little boy is five months old and weighs twenty-one pounds. The parents say he is as strong, large, bright, and active as any of their children were at his age. He has perfect use of his limbs and can easily support his weight on his feet. No apparent effect from loss of extremity of cauda equina.

April 11. Seven months old, weighs twenty-three and three-quarters pounds; healthy, strong, and vigorous. Dentition is under way, the two lower incisors being well through, and the gums swollen with the upper incisors. The child sits alone on the floor and plays, and can stand by a chair or any object by which it can hold on. It has perfect use of its limbs and shows no nervous symptoms whatever, and it is now nearly five months since the operation was performed.