

No.	NAME	Age	Admitted	Died	Under the care of	Examination, at what time after death
38	Edw <sup>d</sup> Cox. Labourer	52	Jan 21	Jan 25	S. Penrose	4 1/2 hours

## MORBID APPEARANCES.

## Thorax

Well nourished body. Riga inverted present.

Each pleural cavity contains 3 oz of straw colored fluid. Tough adhesions exist over both apices. There is much lymph covering the posterior & lateral aspects of the R lung.

Lungs. R = 3 1/4 oz. The whole of the R upper lobe, & the greater part of the R middle lobe (with the exception of the posterior lower edge) are in a state of gray hepatization which is beginning to resolve. The R lower lobe exhibits from above downwards the conditions of Gray hepatization Red hepatization & congestion with purulency. The R lung as a whole sinks in water.

The diaphragm is intensely congested & almost airtight.

Larynx healthy. Trachea full of frothy mucus. The Supra tracheal glands are swollen & softened & one has broken down in the centre into a purulent mass. Pneumonia healthy. Heart = 13 oz. Large milk spot on the R Ventricle.

There is dilatation of the R side of the heart & all the cavities are full of agony clot. The valves are healthy. The heart muscle shows a distinct fatty change.

## abdomen

No peritonitis or ascites.

Liver = 5 lbs 10 oz. The liver is slightly fatty & shows cloudy swelling. The Gall Bladder is empty. No gall stones.

Spleen = 8 1/2 oz. Very diffluent.

Pancreas = 6 oz. Healthy.

Kidneys R = 7 1/2 oz. L = 6 oz. Both show cloudy swelling and are fatty.

Bladder healthy.

Alimentary Canal. The Stomach contains food. No catarrh. The intestines are healthy.

Testes healthy.

R. S. Penrose

No. in Reg <sup>d</sup>	NATURE OF DISEASE.
133	Pneumonia. Fatty degeneration of the Heart.

## CASE.

Patient too delirious to obtain a history.

His bedding shows keeps reports; that he lies on drink; has first taken ill on Jan 13<sup>th</sup>, but would not take to his bed until the 16<sup>th</sup>. He became so troublesome that she sent him to the hospital on the 21<sup>st</sup>.

On admission Strongly built, well nourished young man. Lies on his back, breathing rapidly with some movement of the alae nasi. Face rather dusky: dilated veins on the cheeks. Delirious: voice hoarse. Tongue slightly coated & stimulous. Occasional cough. Temp 104. Pulse 100 - weak - hurried. 10 22: dark: acid: albumen: Chlorides much diminished.

Patient is too weak to stand an exhaustive examination.

Lungs Delirious over night approx 10th with tubular rattling: & whispering pericardiology: this sign being best heard in R. axilla & R. supra scapular region.

Sputum scanty: yellowish: traceless.

Jan 25. Patient is still in a state of muttering delirium. Face a little congested. Temp. rapid, but fairly easy: 40 pers min. Pulse 120 - weak or unsteady. Signs in right lung have become more marked, & both sides of chest are full of bubbling rales.

- 24 Slight better today. Both lungs full of large moist rales. Pulse a little stronger. Slight icteric tinge about the face - no cyanosis.

- 25 Patient died this morning 9.50 AM. Before death pulse became very rapid & weak.

treatment digitalis - Strychnine - brandy - 85 grs.

D. S. Penrose.



No.	NAME	Age	Admitted	Died	Under the care of	Examination, at what time after death
28	Edw <sup>d</sup> Cox. Labourer	57	Jan 21	Jan 25	S. Penrose	4 1/2 hours

## MORBID APPEARANCES.

## Thorax

Well nourished body. Riga inverted present.  
Each pleural cavity contains 3 oz of straw coloured fluid. Tough adhesions exist over both apices. There is recent lymph covering the posterior & lateral aspects of the R lung.  
R = 344 10/3. The whole of the R upper lobe, & the greater part of the R middle lobe (with the exception of the posterior lower edge) are in a state of gray hepatization which is beginning to resolve. The R lower lobe exhibits from above downwards the conditions of Gray hepatization Red hepatization & congestion with purulency. The R lung as a whole sinks in water.  
The lung is intensely congested oedematous and almost airtight.  
Lungs healthy. Trachea full of frothy mucus. The supra laryngeal glands are swollen & softened & one has broken down in the centre into a purulent mass.  
Pericardium healthy. Heart = 13 oz. Large milk spot on the R ventricle.  
There is dilatation of the R side of the heart & all the cavities are full of agony clot. The valves are healthy. The heart muscle shows a distinct fatty change.

## abdomen

No peritonitis or ascites.  
Liver = 5 lbs 10/3. The liver is slightly fatty & shows cloudy swelling. The Gall bladder is empty. No gall stones.  
Spleen = 6 1/2 oz. Very soft.  
Pancreas = 6 oz. Healthy.  
Kidneys R = 7 1/2 oz. L = 6 1/2 oz. Both show cloudy swelling and are fatty.  
Bladder healthy.  
Alimentary Canal. The stomach contains food. No catarrh. The intestines are healthy.  
Testes healthy.

Rosalbony Javor

No. in Reg <sup>d</sup>	NATURE OF DISEASE.
133	Pneumonia. Fatty degeneration of the heart.

## CASE.

Patient too delirious to obtain a history.

His bedding house keeper reports; that he has been on drink; has first taken ill on Jan 13<sup>th</sup>, but would not take to his bed until the 16<sup>th</sup>. He became so troublesome that she sent him to the hospital on the 21<sup>st</sup>.

On admission Strongly built, well nourished young man. Lies on his back, breathing rapidly with some movement of the alae nasi. Face rather dusky: dilated pupils & t. cheeks. Delirium: voice hoarse.

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Reprinted from the BRITISH MEDICAL JOURNAL, September 7th, 1901.

TWO CASES OF CHRONIC HYDROCEPHALUS IN INFANTS TREATED BY TAPPING AND BY THE INTRODUCTION OF ASEPTIC AIR IN THE PLACE OF THE FLUID.

Paper read in the Section of Diseases of Children, At the Annual Meeting of the British Medical Association, Cheltenham, July-August, 1901.

BY WM. EWART, M.D., and W. LEE DICKINSON, M.D., F.R.C.P. Senior Physician to St. George's Senior Assistant Physician to St. George's Hospital.

THIS induction of "artificial pneumocephalus," which was resorted to in the following cases, may lead to further developments in the treatment of chronic hydrocephalus. At any rate, the method is worth putting on record in connection with the relief which it afforded to some of the symptoms, and with the considerable reduction in the size of the head which was obtained in one of the cases.

Tapping the ventricles by means of a fine trocar has been carried out by various observers, and many years ago by one of us, but only with partial and temporary benefit. The intracranial pressure is relieved by the escape of a certain amount of fluid, but as the flow must stop as soon as the membranous portions of the cranium have ceased to be over-stretched, any further reduction of the cranial capacity can only be effected by some external pressure such as that of an elastic bandage, which has practical objections. As a fact, the bulk of the fluid remains within the ventricles.

We therefore determined to modify the old operation in such a way as to obtain a complete evacuation of the fluid by allowing aseptic air to take its place. For this purpose, in addition to the Southey's cannula and indiarubber tube acting as drain, a second Southey's cannula was provided with a sterilised indiarubber tube, the free end of which was connected with the nozzle of a small glass syringe from which the piston had been removed and the broad end of which was plugged with cotton wool after sterilisation. The two trocars were then ready for introduction into the fontanelle with all antiseptic precautions, and with careful avoidance of the vicinity of the sinus, the site for the outflow puncture being selected at a short distance below that for the air supply, and too great a rapidity of outflow being guarded against by a regulating small screw clip such as is used for feeding bottles.

abundant transpiration.

10th with tubular vomiting: lying flat head in R. axilla &

across. lying abdomen. Face a little congested. 10th 120 - weak & unwell. signs in both sides of chest are full of bubbling

day 2 moist rales. Pulse a little 140 rapid & weak.

11th. Before death pulse became very

ready - 140.

S. S. Tucker.



No.	NAME	Age	Admitted	Died	Under the care of	Examination, at what time after death
38	Edw <sup>d</sup> Cox. Loburn	J <sup>r</sup>	Jan 21	Jan 25	S. Pearson	4 1/2 hours

## MORBID APPEARANCES.

## Thorax

Well nourished body. Rigor mortis present.  
Each pleural cavity contains 3 or 4 ounces cloudy fluid. Tough adhesions exist over both apices. There is a small lymph covering the posterior & lateral aspect of the R lung.  
R = 3 1/2 in. L = 1 1/2 in. The whole of the R upper lobe, & the greater part of the R middle lobe (with the exception of the posterior lower edge) are in a state of gray hepatization which is beginning to resolve. The R lower lobe exhibits from above downwards the conditions of gray hepatization Red hepatization & congestion with purulency. The R lung as a whole sinks in water.  
The lung is extensively congested oedematous and almost airtight.

Lungs healthy.

swollen &amp; softened

Pericardium healthy

There is dilatation

agony clot. The

latter change

## Abdomen

No peritonitis or ad-

hesions. R = 5 lbs 10 oz.

Liver is empty.

Spleen = 8 1/2 oz.

Pancreas = 6 oz.

Kidneys R = 7 1/2 oz.

L = 8 1/2 oz.

Bladder healthy

Alimentary Canal

are healthy

Testis healthy

The operation planned on these lines was successfully carried out with the results anticipated, namely a considerable output of fluid, a considerable reduction in the size of the head, and the cessation of the pressure symptoms for the relief of which the tapping had been undertaken.

CASE 1.—A male infant, 6 months of age, was admitted on January 21, 1902, into St. George's Hospital, with a large head, but no history of fits or meningitis. The head was rather large at birth, and slightly delayed delivery. It seems to have grown steadily, and during three weeks' attendance in the out-patient department its circumference increased from 21 to 24 inches. On admission the child, otherwise healthy, but helpless owing to the weight of the head, presented the advanced features of hydrocephalus—enlarged, prominent, prominent, face, a flattened and broadened root of nose, shortened and stretched upper eyelids, depressed and collapsed nostrils, a prominent forehead, all the cranial bones separated, and an anterior fontanelle measuring 3 inches transversely. With the electric light the skull was found to be remarkably translucent. On January 21st lumbar puncture was performed by Dr. S. Vere Pearson, but only a couple of ounces of fluid were obtained in the course of twenty-four hours. The mother being anxious for some efficient treatment the operation of "artificial pneumocephalus" was planned and carried out, and on January 22nd it was actually performed by Dr. S. Vere Pearson, acting under the directions and with the assistance of one of us. The tubes were removed after remaining *in situ* twenty-two hours, whilst a little fluid was still escaping. The total output was 4 ounces of fairly opalescent, faintly albuminous, bacteriologically sterile fluid of specific gravity 1004. There was marked collapse due to the rapidity of the outflow at first, and a temporary rise to 1007, together with some irritability; but the general effect of the operation was decidedly favourable, as shown by the relief of the screaming, the diminution of the rigidity, and the cessation of the vomiting, and there were no symptoms of meningitis.

Notwithstanding the admission of air, as shown by tympanitic resonance of the whole head, the size of the head was greatly reduced, the bones overlying freely, the fontanelles becoming depressed and the integuments wrinkled.

The measurements were as follows:

	Before Operation.		After Operation.		Decrease.
	Inches.	Inches.	Inches.	Inches.	
Maximum circumference ...	24	20	4	—	—
Occiput to glabella ...	16	13	3	—	—
Mastoid to mastoid ...	14	12	2	—	—

One of the results of the operation was that the transudation of the head was almost entirely lost except at the vertex where the longitudinal sinus was still plainly outlined. For a few days moderate pressure was applied by means of elastic webbing, but this method of treatment was of doubtful benefit, and was not persevered with.  
On February 2nd, the head being still tympanitic, but having largely settled with fluid, the operation was repeated in a similar way. Twenty-eight ounces were gradually drawn off in seven hours. The most highly sanguine in colour until the red corpuscles subsided, when the rose, and the albuminous coagulum on holding amounted to a heavy deposit. This time the child became somewhat blanched and very quiet. The pulse and respiration were irregular for a few days, after which there was rigidity of the neck and tonic spasm of the limbs.

On February 23rd definite left facial paralysis was noted, which was subsequently recovered from completely. The fluid reaccumulated again very tympanitic, and on February 27th and the operation was performed for the third time. Five ounces were drawn off in ten hours. The fluid

was fairly sanguine, specific gravity rose, and still sterile. This was followed by more constitutional disturbance. There was the third and fifth days after the operation. In addition to the facial paralysis, an external squint of the right eye made its appearance. The

No. in Reg<sup>t</sup>

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## NATURE OF DISEASE.

133

Pneumonia. Fatty degeneration of the Heart.

## CASE.

Patient too delirious to obtain a history.

His bodily hours keep a report; that he lies on drink; has first taken ill on Jan 13<sup>th</sup>, but would not take to his bed until the 16<sup>th</sup>. He became so troublesome that she sent him to the hospital on the 21<sup>st</sup>.

On admission Strongly built, well nourished young man. Lies on his back, breathing rapidly with some movement of the alae nasi. Face rather dusky; dilated venous in the cheeks. Delirium; voice hoarse. Tongue lightly coated & stimulous. Occasional cough. Pump over.

Pulse 120; dark; acid; albumen;

haematuria &amp; mucus.

lots with tubular casting;

ring lost head in R. anastomosis

over

ing albumen. Face a little congested.

Pulse 120 - weak &amp; running. Rigor in

with sides of chest are full of bubbling

of 3 post take. Pulse a little stronger

and

few. Before death pulse became very

and - very fast.

D. S. Tucker.

child, however, recovered to a great extent, losing both facial paralysis and squint, though not altogether losing its irritability nor the rigidity of neck and limbs.

The fourth operation, on March 25th, was well borne, and for the first time it was considered justifiable to completely empty the head. Twenty ounces of clear fluid, of specific gravity 1002, were obtained in the course of thirteen hours and a half. The after-symptoms were far slighter than on previous occasions. After this there was a notable improvement as regards the rate at which the head settled.

On May 4th the operation was performed for the fifth time. Mr. A. S. Morley taking the place of Dr. Pearson. The details were precisely as before, except that the cannula connected with the air supply was inserted before the other, it being thought that by this means the entrance of air would be further facilitated. This result appeared to be obtained, for the head was markedly tympanitic three-quarters of an hour after the commencement of the operation and there was considerable less falling in the night, and the head was again completely emptied. The fluid amounted to 41 oz., and was quite clear, of pale straw colour, and of specific gravity 1002. Some vomiting occurred at the immediate effect of the operation, but beyond this there were no bad symptoms.

A sixth tapping was made on June 5th for the relief of the constant screaming. The tubes were left in for eight hours and a half with a total output of 51 oz. slightly sanguinous fluid. No complications followed except some vomiting the same evening, and a slight rise in temperature two days later. As on previous occasions the screaming ceased *per se* and the child was obviously made comfortable.

The seventh tapping, which was preceded by a period of several days discomfort and screaming, was carried out by Mr. Morley on June 22nd in the same manner and with the same results as the previous ones—the child being pacified and apparently comforted by the operation, and the remaining comfortable until reaccumulation took place again. On this occasion much fluid was removed (42 ounces collected), and the two tubes were left *in situ* for a longer time (4 hours) than ever before. The tapping was observed that the child moved his head rather more freely on the pillow, without, however, making any attempt to raise it, but when the body was held vertical out of bed or supported in the sitting posture, the infant was able to hold up his head without assistance. The aspect, general health, appetite, and nutrition, continued excellent, and the legs and arms remained slightly rigid and semi-flexed, and the infant remained motionless and passive, and no evidence of any increase about this time, and the temperature was not unduly elevated. About July 1st the head had again become exceedingly heavy, and its tympanitic area much reduced. On July 14th Mr. F. J. Munnery operated in the procedure, of which it is only necessary to mention those details that tend to favour the complete evacuation of the fluid. When the latter had practically ceased to flow on the second day, the end of the slightly raised and the head settled gradually so as to enable the end of the cannula to reach the remnant of the fluid. Dr. Penon, who was present at the operation, suggested utilizing as a suction pump sent at the end of the tubing which had been inserted in the length of a piece of bladder tubing which was applied with effect, particularly ordinary outflow and this method was applied with effect, particularly when the admixture of air bubbles with the escaping fluid showed that mere siphonage would no longer serve. The same device was used finally to draw a quantity of air through the two tubes and the intraventricular space. By this means the considerable amount of fluid was removed, and sufficient air supply, were lessened.

The ventricles were probably relieved of the same amount (about 4 ounces), as on the previous occasion but only a ounces were collected. The spinal fluid was rose, and the fluid assiduously bright, of light straw colour. The tubes were left in thirty hours. This seemed to be the most successful of all the operations, as besides being quiet and comfortable, the infant seemed to lose a little of the rigidity of the limbs at the same time. This was followed by a period of relative quietude of the time of the internal treatment in this case was limited to the administration of the internal treatment to this case was limited to the administration of a few grains of bromide of potassium, and of small doses of strychnine (gr. every six hours) from March 14th to April 1st, and it remains an open question whether this last was in any way assisting in the rate of the transudation during the latter period of observation.



No.	NAME	Age	Admitted	Died	Under the care of	Examination, at the time after death	No. in Reg <sup>t</sup>	NATURE OF DISEASE.
28	Edw <sup>d</sup> Cox. Loburn	3A	Jan 21	Jan 25	S. Fenner	4 1/2 hours	133	Pneumonia. Fatty degeneration of the heart.

MORBID APPEARANCES.

CASE.

Thorax

Well nourished baby. Ribs inserted present.  
 Each pleural cavity contains 3 oz of straw colored fluid. Tough adhesions exist over both apices. There is usual lymph covering the posterior & lateral angles of the R lung.  
 Lungs. R = 3 1/2 x 10 1/2. The whole of the R upper lobe, & the greater part of the R middle lobe (with the exception of the posterior lower edge) are in a state of gray hepatization which is beginning to resolve. The R lower lobe exhibits from above downwards the conditions of gray hepatization Red hepatization & congestion with fibrin. The R lung as a whole sinks in water.  
 The lung is intensely congested oedematous and almost airtight.

Larynx healthy. Trachea full of swollen & softened & one has to Percussion healthy. Heart = 13 03  
 There is dilatation of the R side of a gray clot. The valves are healthy change

abdomen

No peritonitis or ascites.  
 Liver = 5 1/2 x 10 1/2. The liver is slightly swollen & softened. No gall stones.  
 Spleen = 6 1/2 oz. Very soft.  
 Pancreas = 6 oz. Healthy.  
 Kidneys R = 7 1/2. Both sides do L = 6 1/2  
 Bladder healthy.  
 Alimentary Canal. The stomach and are healthy.  
 Testes healthy

Summary of the Operations.—Eight tapplings were performed between January 26th and July 15th. The table shows that the largest amount collected was 5 ounces, and this was probably the measure of the ventricular capacity in this case.

Tapplings	Ounces Collected	Sp. Gr.	Colour, etc.	Album.	Number of Hours Tubes Left in situ.
Jan. 26	42	1004	Straw sterile	Little	26
Feb. 4	58	1010	Blood tinged, all	Abund.	7
Feb. 22	50	1008	Slightly blood-tinged, sterile	"	10
March 28	30	1011	Clear	"	13
May 21	42	1010	Slightly cloudy	"	12 about
June 8	19	1007	Clear	"	48
June 22	48	1010	Clear straw	"	47
July 15	(more evacuated)	1000	Clear straw	"	37

Special attention is drawn to the fact that, after the first tapping, the fluid lost its cerebro-spinal character, and assumed rather the character of serum, its specific gravity rising, and with it the amount of albumen. The slight admixture of blood which sometimes occurred must have been due to the puncture of some vein.

Complications, etc.: Effect on the Temperature.—All the operations were free from septic complications, and after three of them there was no marked pyrexia. The ultimate effect, well shown on the first two occasions, was that the temperature, which had been unsteady, became, like the other functions, much more regular than previously. But, after the other tapplings, transient pyrexia occurred, rising after the third tapping, to a maximum, whilst oscillations of 115° continued until the middle of March. The tapping of March 18th raised the temperature to 101°, but this subsequently remained normal and subnormal, with an unexplained elevation between April 2nd and 7th, until the following operation on May 21st. This time there was no elevation, but the temperature rose a few days before the next tapping, which was performed on June 8th. Two days and four days after this a rise to 102° occurred, but the temperature then became subnormal to 102° again. There was some discomfort and an oscillating temperature before the tapping of June 22nd, which slightly de-pressed the temperature for two days; on the fourth day (June 25th) it rose to 105° with a convulsive attack, soon followed by a rise to 106°, and next day to subnormal. The temperature, however, did not settle down till after the operation of the first tooth on July 1st, after which it was quiet for three days, and became again a little unsteady. The last operation on July 15th was followed by a slight rise (to 102°) on the evening of the 15th, and again to 100 on the 17th, on the evening of the 18th, and continuing subnormal afterwards.

The rise associated with a convulsive attack may have been partly connected with some peripheral irritation, perhaps of the teeth, or perhaps simply gastric, as the child vomited coagulated milk. The fact that no rise occurred on three occasions shows that with an improved technique and appliances, the operation might be conducted without any complication. The Effect on the Cerebral Condition.—As regards the brain, it is difficult to gauge the real value of the tapping owing to the disturbing effect of complications, such as the left facial

Paralysis too delirious to obtain a history.  
 His bedding hours keeps reports; that he lies on drink; has first taken ill on Jan 13th, but would not take to his bed until the 16th. He became so troublesome that she sent him to the hospital on the 21st.

On admission Strongly built, well nourished young man. Lies on his back, breathing rapidly with some movement of the alae nasi. Face rather dusky; blood vessels in the cheeks. Diction: voice hoarse. Tongue lightly coated. Stimulons. Occasional cough. Temp 102. Pulse 102. Dark: acid: albumen:

paralysis which occurred after the second tapping and the right external squint, also temporary in duration, which occurred after the third, which indicate that slight rigidity and tenderness and the slight tonic contraction of the limbs which persist must be regarded as results of the original meningitis, and of the considerable compression which the brain had suffered. According to present condition since the last tapping is a great advance before admission, and this is corroborated by the observations of the head nurse during the early period of the patient's residence in the hospital prior to operation. Nevertheless, there is still enough rigidity to seriously impede the progress and growth of the child by precluding movement and the remains a blank. Although the infant can hear and see, it takes no notice of its surroundings so long as left undisturbed, and screaming and of their absence, the gain in well-being and comfort is very marked. As the fluid reaccumulates irritability and screaming return; but they are invariably allayed at the time of the tapping, and for some days afterwards. The general health, in spite of the recurrent attacks of pyrexia, etc., has improved. There has been a slight but progressive gain in weight, and all the functions have remained normal throughout.

General Remarks on the Case.—The infant's present condition after eight tapplings and the removal from the ventricles of an aggregate of about 11 pints of fluid must be from pressure has for corresponding periods been afforded to the brain substance, which, as the child lies, must be subjected to great pressure in the dependent parts from the weight of the effusion, and to considerable tension in other parts as such as any unstrained observer can perceive. If the brain is allowed to grow and develop, this relief should be made temporary and partial, nevertheless it has, in our estimation, been worth securing. We may call attention to the satisfactory state of the functions, and of the general nutrition and first tooth. It was observed after the first tapping that the hydrocephalic cry had given way to the normal "baby wail," and this was specially noticed after the last operation. Looked upon in connection with the first operation which was preventable, and would have been avoided if the fluid had not been inadvertently allowed to escape with too great a rush. The temporary rigidity are consistent with the lysis and of increased rigidity are consistent with the view that some transient irritation of the meninges had been set up. The muscular rigidity and tenderness, although now much less, still constitute the most troublesome feature, as they preclude the advantage of movement. How far the case may continue to improve under this treatment, or some modified form of it, we cannot foretell.

CASE II.—G.S., a male infant, aged 6 months well nourished and healthy, but for the rather large head, bulging fontanelle, prominent frontal bones, and slightly Mongolian aspect, was admitted into St. George's Hospital on June 6th, 1901, at the recommendation of Dr. Fenner, who

injection.  
 Calves breathing!  
 in R. axilla &  
 Face a little congested.  
 running. rigidity in  
 (are full of bubbling  
 Pulse a little 104 rapid  
 A pulse became very  
 S. S. Tucker.



No.	NAME	Age	Admitted	Died	Under the care of	Examination, at what time after death
38	Edw <sup>d</sup> Cox. Labourer	52	Jan 21	Jan 25	S. Pearson	4 1/2 hours

## MORBID APPEARANCES.

## Thorax

Well nourished body. Rigor mortis present.

Each pleural cavity contains 3 or 4 ounces cloudy fluid. Tough adhesions exist over both apices. There is much lymph covering the posterior & lateral aspects of the R lung.

Lungs. R = 3 1/2 x 10 1/2. L = 16 1/2. The whole of the R upper lobe, & the greater part of the R middle lobe (with the exception of the posterior lower edge) are in a state of gray hepatization which is beginning to resolve. The R lower lobe exhibits from above downwards the conditions of gray hepatization, red hepatization & congestion with fibrin. The R lung as a whole sinks in water.

The lung is intensely congested, oedematous and almost airtight.

Larynx healthy. Trachea full of frothy mucus. The Infra laryngeal glands are swollen & softened & one has broken down in the centre into a purulent mass. Pleurae healthy. Heart = 13 oz. Large milk spot on the R Ventricle.

There is dilatation of the R side of the heart & all the cavities are full of agony clot. The valves are healthy. The heart muscle shows a distinct fatty change.

## abdomen

No pusillitons or ascites.

Liver = 5 1/2 lbs 10 oz. The liver is slightly fatty & shows cloudy swelling. The Gall bladder is empty. No gall stones.

Spleen = 6 1/2 oz. Very different.

Pancreas = 6 oz. Healthy.

Kidneys R = 7 oz. L = 6 oz. Both show cloudy swelling and are fatty.

Bladder healthy.

Alimentary Canal. The stomach contains food. No catarrh. The intestines are healthy.

Testis healthy.

*Richardson Javor*

No. in Reg <sup>t</sup>	NATURE OF DISEASE.
133	Pneumonia. Fatty degeneration of the heart.

## CASE.

Patient too delirious to obtain a history.

His bookkeeping keeper reports; that he has on drink; has first taken ill on Jan 13<sup>th</sup>, but would not take to his bed until the 16<sup>th</sup>. He became so troublesome that she sent him to the hospital on the 21<sup>st</sup>.

On admission Strongly built, well nourished young man. Lies on his back, breathing rapidly with some movement of the alae nasi. Face rather dusky: dilated pupils & t. cheeks. Delirium: voice hoarse.

Occasional cough. Temp 104.2: dark: acid: albumen:

haematuria.

lots with tubular castings:

very hot head in R. axilla &

even.

ing albumen. Face a little congested.

to 120 - weak occurring. rigidity in

with sides of chest are full of bubbling

of 2 moist rales. Pulse a little 140 rapid

rapid.

even. before dark pulse became very

only - 104.5.

S. S. Jackson.

had attended the child as an out-patient and had noticed an increase of a quarter of an inch in the cranial circumference during the last three weeks. The mother was healthy, intelligent, and of good physique, but had suffered from hydrocephalus, and presented in a slight but unmistakable degree the cranial features of the condition. The infant, born at full term without instruments, but after a difficult and "dry" labour had always been healthy and had never had convulsions or screaming at night, but had been subject to diarrhoea for the last three months. The head was first noticed to be larger than normal at the age of two months, and increased in size slowly up to one month ago, when the increase was much more rapid.

On admission the general aspect was healthy but the head was square without much facial disfigurement, except the characteristic expansion and flattening at the root of the nose. The anterior fontanelle was about 2 inches square, the front parietal suture open about 1/2 inch, the inter-frontal about 1 inch, and the interparietal open about half way to the posterior fontanelle. The latter was closed. The frontal eminences were prominent, especially the right eminence. The brows were somewhat raised, but not to the extent of raising the lower eyelids.

On June 10th the head was tapped by Mr. A. S. Morley in the manner described in Case 1. The cannulae were inserted in the right sphenoparietal region and left in situ for nine hours: 40 ounces drained away. The fluid was slightly blood-stained, but at two distinct intervals some clear fluid ran for a while. There was some tendency to collapse a few minutes after the first 2 ounces had escaped, perhaps because the head had been lowered to favour the flow, but the patient rallied well with brandy and strychnine. He slept comfortably during the night without any screaming such as had occurred during the previous nights, and no complications ensued. Tympanic resonance on percussion was obtained over the greater part of the vertex and forehead and for nine days slight oozing persisted. A powder containing 1/4 grain of nitrate of silver was ordered to be taken every six hours.

The infant was readmitted for operation in the middle of July, but as it proved to be active, bright, apparently intelligent, carrying its large head boldly, and as there was no bulging of the fontanelle, it was deemed inadvisable to repeat the operation. Moreover the fontanelles are becoming rapidly smaller, although the head itself seems to be rather larger.

Remarks—In this case the removal of the fluid and the introduction of air seemed to have had only a beneficial effect and reaccumulation of fluid has not taken place. It may be noted that nitrate of silver was prescribed concurrently with the operative treatment, and was administered for nine days subsequently. Conceivably this may have had a share in the favourable result. At any rate the case suggests that sometimes the operation might be performed with the hope of giving permanent relief.

## PROVISIONAL CONCLUSIONS.

The provisional conclusions warranted by our limited experience are few:

1. With due precautions the fluid of chronic hydrocephalus may be completely evacuated from the yet unopened skull of infants, and aseptic air may be allowed to take its place. This operation may be repeated without detriment and with scarcely more risk than belongs to the usual method of paracentesis.

2. In favourable cases of moderate effusion, such as Case 11, a single operation may suffice. Continued oozing from the puncture for a few days after the removal of the tubes is not unfavourable.

3. In cases of considerable effusion an obvious indication is to relieve the brain from the weight, and from the pressure of the fluid. The evacuation is facilitated by the introduction of aseptic air. In Case 1 this treatment has proved to be of decided advantage. By a timely repetition of the operation a hydrocephalic infant might be enabled to carry the weight of the head, and, if the treatment were begun sufficiently early, permanent damage to the brain tissue might be averted and a normal development might perhaps ensue.

4. In large heads, whilst hydroencephalus persists, a considerable splashing sound is readily obtained. There is obvious risk in eliciting this sound by forcible succussion, and for the same reason any abrupt movement of the head should be avoided.