very ill. Twelve days after the first operation an anaesthetic was given and the residual empyema searched for by needle, but it could not be found. Four inches of the posterior part of the fifth rib, and two inches of the fourth were resected, and the whole hand was put in to explore. On breaking down a long stretch of adhesions posteriorly a cavity containing one ounce of foul pus was opened at the back of the root of the lung. The original empyema cavity was quite clean. A tube was inserted. After a long illness the boy made a perfect recovery.

CASE II

A gentleman, aged 45, was referred to me by Dr. J. A. Nixon and Dr. Dyer. He had been ill five weeks with influenzal pneumonia; the temperature was still 99° to 100° every night, there was dullness at the right base, and the patient looked ill. A skiagram showed opacity of the right base. A needle had been put in three weeks before, but found no pus. Under ether, I needled in five places but found no pus. A piece of the ninth rib was resected in the posterior axillary line, and the pleura opened; it was clean and non-adherent. The lung was adherent further back and felt firm. The clean pleura was closed, more rib removed posteriorly, and adhesions separated by the finger. Two small loculi of pus were found, one alongside the vertebral column, and another between the lobes of the lung. A bifurcated tube was put into these, the chest wall sewn tightly around it, and the projecting end clamped. Twice a day the discharge was drained off under the surface of carbolic lotion. In ten days the empyema had healed.

CASE III

I was called by Dr. C. Bernard to see a man, aged 60, who had appeared to recover from influenza in the epidemic of January, 1933, but after being up a week had to go back to bed with fever, shortness of breath, and dullness of the base of the right lung, with absent breath sounds and diminished vocal fremitus. The heart was not displaced. A needle was inserted in two places, but no pus was found. He was removed to the Bristol Royal Infirmary, a very sick man. Under an anaesthetic the chest was repeatedly needled, but no pus was found. A piece of rib was resected posteriorly, and clean, non-adherent pleura opened. This was closed again, and adherent pleura separated back until an abscess containing several ounces of foul pus was opened between the base of the lung and the dome of the diaphragm far in. It was treated as in Case II, and an excellent recovery followed.

The main lesson to be learned from these cases is that one must not be dissuaded from diagnosing empyema because repeated needling fails to strike pus. In a patient who has suffered from pneumonia, and especially influenzal pneumonia, if the temperature keeps up for more than three weeks, if dyspnoea and sweating are present, and dullness is found at the base of the lung with diminished breath sounds and vocal fremitus, that is enough to warrant an exploratory operation and a determined effort to find pus with the finger, or if necessary the whole hand, inside the chest, even if the heart is not displaced. A skiagram is useful; it will show some opacity, but it cannot be relied on to tell us exactly where the abscess is. The loculi of pus may be small, but they are likely to lead to a long and serious illness if not evacuated.

There are two exceptions to the rule just laid down. If tubercle bacilli have been demonstrated in the sputum a diagnosis of crypto-empyema would be precarious. If the patient is very toxic, bringing up quantities of putrid expectoration, and especially if it contains elastic fibres, there is probably an open abscess or gangrene of the lung, and operation would be too dangerous. A closed abscess of the lung might well be confused with crypto-empyema, and if the pleura was found non-adherent, it would be safest to make a two-stage operation of it, packing off with gauze at the first intervention so as to promote adhesion of the lung to the chest wall. Probably some cases of abscess of the lung are better left alone.

It may be objected that the surgeon following this principle will often find himself meddling with an

"unresolved pneumonia." We do not agree. When from the so-called "unresolved pneumonias" with fever and physical signs persisting for three weeks there have been deducted the tubercles, the pleuritic effusions, the empyemas, and the abscesses, there is little if anything left.

SODIUM SONERYL AS A BASAL HYPNOTIC A REPORT OF 150 CASES

BY

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Sodium soneryl is the sodium salt of butyl ethyl barbituric acid, and has been used as a basal hypnotic before general anaesthesia in 150 cases at St. Bartholomew's Hospital between January 30th and April 14th, 1933. Chemically sodium soneryl resembles nembutal, which is sodium ethyl (1-methyl-butyl) barbiturate; clinically it is of lower toxicity, and is administered in larger doses. The presence of a methyl group may be the cause of the greater toxicity of nembutal. The series of cases includes patients whose ages varied from 6 to 70 years, and operations were performed for diseases of the ear, nose, and throat (45), the abdomen (39), the uro-genital tract (36), bone (11), the breast and neck (10), and for hernia (9). In every case the anaesthetic was administered by means of Boyle's nitrous-oxide-oxygen-ether apparatus. In the ear, nose, and throat cases, and in nearly all the abdominal ones, the anaesthetic was given by the endotracheal route, comprising in all eighty-five cases.

Sodium soneryl was taken by the oral route, in capsules containing 0.15 gram each. In the first eleven cases the dosage was as follows. Two capsules (0.3 gram) were given at 8 p.m. the day before operation; this ensured a good night's sleep, though in four instances the patients were found to be sweating the next morning. On the day of operation sodium soneryl was given one hour before the induction of anaesthesia, this dose being regulated according to the weight of the patient. Thus from 6 to 8½ stone 0.45 gram (three capsules), from 8½ to 10½ stone 0.6 gram (four capsules), from 10½ to 12½ stone 0.75 gram (five capsules), and above 12½ stone 0.9 gram (six capsules) were administered. Gynaecological operations were performed on six of these patients, and it was found that they were still drowsy on the morning of the operation, so that enemas were imperfectly returned; on this account the evening dose was discontinued. Doses of 0.45 gram were generally found not to produce sleep in adults, and the dosage was therefore again simplified, the following scale being adopted for the majority of the cases in the series: below 10 stone, 0.6 gram; between 10 and 12 stone, 0.75 gram; and above 12 stone, 0.9 gram. In children (below 12 years) 0.3 gram was given, followed by a further dose of 0.15 gram if the child was not asleep or drowsy after half an hour. The capsules were given one hour, and atropine (grain 1/75) fifteen to thirty minutes, before operation. No morphine was given except in three cases.

EFFECTS OF SODIUM SONERYL

The following effects were noted: in ninety-seven cases the patient was asleep on reaching the operating theatre; in forty-six the patient was very sleepy; in five no definite effect was noted; and in two the patient was excited. All arrived in the theatre breathing naturally, with no trace of cyanosis and no stertor. Sleep was commonly produced in thirty to forty-five minutes. The induction of anaesthesia was very smooth, the length of time taken being the same as in non-premedicated patients, averaging about six minutes for moderately deep anaesthesia by nitrous oxide, oxygen, and ether. In the majority of

instances the amount of ether used was considerably less than would otherwise have been necessary. In vaginal and urethral operations, and in bone operations, which included two amputations through the thigh, no ether was required. In most of the hernia cases gas and oxygen alone was employed. In seven cases the breathing was shallow, including three in which morphine (grain 1/6) was given, the usual dose of soneryl being diminished by 0.15 gram. In the remaining 143 patients there was no obvious depression of respiration, such as usually occurs after nembutal (3 grains) and morphine (1/6 grain). Consequently the induction of anaesthesia following the administration of soneryl was more rapid than after nembutal and morphine; the signs of anaesthesia were not affected.

Recovery from the anaesthetic occurred in most cases after two or three hours. After being awake for an hour or two the patient usually slept for the next six to twelve hours, and on waking up had no recollection of having been awake previously. In eighty cases the average time that elapsed before recovery was two and a half hours; the longest recovery period was twelve hours, following a long abdominal operation. With nitrous-oxide-oxygen anaesthesia recovery was particularly rapid. Restlessness during recovery was noticed in some patients. In fifty consecutive cases the recovery was observed carefully, and in five of these the patients were noisy or excited. In all these instances the operation had been over one hour in length, and the restlessness was controlled by morphine or omnopon. Injection of morphine or omnopon is effective, and is indicated after long anaesthesia with nitrous oxide, oxygen, and ether. In 130 cases there was no vomiting after the anaesthetic; it occurred in twenty cases, but was not excessive. Memory was abolished, except for outstanding events. With those patients who were asleep on arrival at the theatre nothing was remembered subsequent to the swallowing of the capsules. Those who were drowsy but not actually sleeping at the time anaesthesia was induced remembered being lifted out of bed, and also remembered the mask being applied to the face, but their condition was one of calm rather than of apprehension at the time of induction.

The urine was examined on the day following the administration of soneryl in most of the cases in order to determine the presence or absence of bile pigments or albumin, as these abnormal constituents are said to appear occasionally after the administration of barbiturates. In no case was either detected.

COMPLICATIONS

Complications and sequelae were considered in the same order as in Boyd's investigation of nembutal (*St. Bartholomew's Hospital Reports*, lxxv). (1) Restlessness supervened in about 10 per cent. of cases. It occurred after prolonged anaesthesia in which ether was used. In such cases morphine (grain 1/6) should be given if the patient is at all noisy or restless on recovery; otherwise morphine is unnecessary. Restlessness was the most common complication observed. (2) There were no cases of post-operative pulmonary disease in this series. During February and March, 1933, fifty cases in which soneryl was given were compared with fifty cases in which only atropine was given, the types of operation being similar in both series. In the latter group there were five cases of bronchitis, in each instance following an abdominal operation. It is likely that the smaller amount of ether required in the soneryl group was responsible for the absence of post-operative bronchitis, as many patients, including those in whom bronchitis occurred in the control series, had suffered from influenza in the recent epidemic.

(3) There were no instances of excessive vomiting. (4) Cutaneous eruptions were not observed. (5) Headache was complained of in two cases, but it was not severe. (6) Amnesia has never been prolonged, and is not so marked as after nembutal. (7) Definite giddiness occurred in four cases. In most of the cases drowsiness persisted during the next day.

CONCLUSIONS

1. Sodium soneryl is a reliable basal narcotic, producing sleep or drowsiness in 95 per cent. of cases when administered by mouth one hour before the induction of general anaesthesia.

2. The optimum dose varies from 0.6 to 0.9 gram, according to the patient's weight.

3. Depression of respiration is produced in a few instances, and restlessness occurs in 10 per cent. of cases. Respiration is depressed far less than by a combination of nembutal (grains 3) with morphine (grain 1/6), and the therapeutic effect desired can be obtained with a much less toxic dosage. No other toxic effects have been observed.

4. Sodium soneryl has not been administered in cases of (a) senility, (b) pulmonary disease, (c) renal impairment, or (d) arteriosclerosis.

The author wishes to express his indebtedness to Mr. A. M. Boyd, at whose suggestion this investigation was undertaken, and to Mr. H. E. G. Boyle, whose advice and guidance made the investigation possible.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

NOTE ON AN OUTBREAK OF PUERPERAL SEPSIS IN A MATERNITY HOSPITAL

The last serious outbreak of puerperal sepsis in the Glasgow Royal Maternity and Women's Hospital occurred between January and March a few years ago. The findings of an investigation into the cause are thought to be of general interest and to be suitable for publication. The outbreak would appear to be attributable to tonsillitis in one of the house-surgeons.

The hospital was divided into two units, each of which had two house-surgeons. The outbreak was confined to one unit, whose house-surgeons we will call A and B; B was the affected one. The first three months, October to December, of B's residence were compared with the second three months, January to March. The cases were also divided according to whether they were handled by A or B.

Table I shows that in the first three months the notifiable pyrexia rates and death rates for the cases of both A and B were approximately the same, but that in the second three months B had a much higher notifiable pyrexia rate and a very much higher death rate. The death rate on the total cases for the second three months was approximately three times the death rate for the first three months.

TABLE I

	October-December			January-March		
	Total Cases	Notifiable Pyrexia	Deaths	Total Cases	Notifiable Pyrexia	Deaths
H.-S. "A" ...	204	21 or 10.3 %	2 or 0.98 %	179	18 or 10.0 %	2 or 1.12 %
H.-S. "B" ...	207	20 or 9.7 %	2 or 0.97 %	238	39 or 16.4 %	10 or 4.2 %
Total deaths ...		4 or 0.97 %			12 or 2.9 %	