supports this, for many cases with fits after a head injury have yielded negative findings on electro-encephalography. These are usually cases without penetrating fracture or other evidence of gross brain damage. There are, however, in our records several cases of gross localized cortical damage in which alterations of potential were observed, in all ways similar to those found with expanding intracranial lesions. In such cases we have assumed an underlying area of gliosis. This aspect of the subject would certainly repay further study.

Fig. 9.—A young man aged 19 was admitted with a history of having had a head injury associated with unconsciousness some seven years previously. About a year after the injury

FIG. 9.

he developed fits and continued to have them at intervals, and his case had been diagnosed as traumatic epilepsy. The record clearly demonstrates the large abnormal discharge arising from the region of the left frontal adverse field: the out-of-phase waves between amplifiers II and III indicate the source of origin of the discharge. In view of these findings we are inclined to label this patient as an idiopathic epileptic who would in all probability have developed his fits regardless of the injury.

We have now had the opportunity of examining several patients in whom the onset of fits occurred in later life, from 40 onwards, and in whom the full neurological investigation, including examination of the cerebrospinal fluid, was negative. In such cases one of the chief concerns of the clinician is to rule out the possibility of an expanding lesion, and air studies are often called for. In our series the electro-encephalogram has always been normal when the encephalogram was normal, but further work is necessary before the reliability of the method can be accurately assessed.

Conclusion

From experience to date in the examination of intracranial tumours, although the electro-encephalogram is surprisingly accurate in localization in most cases, we would not like to dispense with the additional help given by ventriculography when operation is contemplated. Information as to the depth of a neoplasm, its absolute size, and its relation to the ventricles, basal ganglia, etc., can only be obtained at present by adequate air studies; and such information is essential in planning the scope of an operation or deciding upon the operability of a tumour.

It is important to emphasize that electro-encephalography by itself is in no way a short cut towards the establishment of the anatomical and pathological diagnosis of intracranial lesions. Like the electrocardiogram, its value is greatest when taken in conjunction with the clinical picture.

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SEA-SICKNESS

BY

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I must go down to the seas again,
 to the vagrant gypsy life,
 To the gull's way and the whale's way,
 where the wind's like a whetted knife;
 And all I ask is a merry yarn from
 a laughing fellow rover,
 And quiet sleep and a sweet dream when
 the long trick's over.

Sea Fever, by JOHN MASEFIELD.

These lines were intended by the Poet Laureate to describe the feeling of seafaring folk, but they may now be applied to a much wider section of the public, for with the development of holiday cruising a great many business and professional people have learned to love shipboard life and the care-free existence of an ocean voyage.

Certain shipping lines have organized winter cruises as long as I can remember, but during the past few years all steamship companies have developed the idea to meet a new public taste. Formerly cruising liners only catered for the well-to-do; nowadays cruises are arranged to meet all pockets, and thousands of people have experienced the joys of ocean travel who up till recent years would never have dreamed of undertaking a voyage on the high seas. New resorts have been opened up by the cruising ships, and such places as the West Coast of Africa, formerly regarded as the "white man's grave," are now regularly visited by Christmas trippers.

There are, moreover, a growing number of people who have found shipboard life so agreeable that they prefer to spend their lives at sea. "Permanent passengers" of this kind are far from uncommon, and on a recent voyage round the world I met a lady who had spent about five years on the journey backwards and forwards to Australia round the Cape. Each voyage she "signed off," but time after time sailing day found her installed once more in her old quarters. The ship chosen by this lady was not a luxury liner but a moderately comfortable old ship with a purser who loved her and did his utmost to make everyone comfortable.

Among the medical profession there are a good many who suffer from what John Masefield has christened "sea fever." A few general practitioners make the sea their life work, but many act as relief surgeons, and not a few retired medical officers of the fighting services and colonial surgeons have found congenial employment in the service of many of our great companies. Since my own so-called "retirement" I have sailed the seas either as a passenger or as a surgeon every year, and during the past two years I have been to South America, round the world via Australia and South Africa, and across the North Atlantic a dozen times. So many thousands of miles of ocean travel in all sorts of ships have given me a good deal of experience of the distressing condition which is the crumpled rose-leaf in the bed of so many lovers of the sea.

I have been induced to write this article by various medical friends and brother officers who insist that some sort of stocktaking of our present knowledge is needed. There seems to be truth in this, and although a good deal has been written on the subject, when I was going to sea again after a long "shore spell" I found it very difficult to turn up the facts I wanted to know in a single article.

Symptoms of Sea-sickness

Sea-sickness, with its train of unpleasant sensations and physical signs resulting by no means invariably in the final act of vomiting, is the reaction of susceptible individuals to a disturbing and unusual environment. Mark Twain in *Innocents Abroad* says: "We all like to see people

sea-sick when we are not ourselves," and, doubtless with this remark in mind, Surgeon Commander Elder describes the stages of the onset of an attack with good-humoured banter.

"After a period of lively chaff," he says, "the victim suddenly becomes quiet and subdued. As Jerome K. Jerome neatly expresses it, 'he ponders' with a pensive look upon his face. He evinces a strong dislike to the use of tobacco by himself or others; he feels an indefinable something in the epigastrium, is cold and miserable, smiling feebly when spoken to, and apparently wishing to be left alone." The stage of vomiting, when it occurs, is preceded by profuse reflex salivation. "While in this state, with lips blue, eyes suffused, complexion varied shades of green, and a general disorder of mind, body, and apparel, his condition is one of abject misery, and strongly deserving of sympathy. Then is it his plaint that the ship will not sink, whereas, earlier on, he may have been afraid that she would and drown all on board. The stage of convalescence is generally marked by an air of blatant superiority over his less advanced fellow-sufferers."

This description fails, however, even to mention the symptom "vertigo," which Dr. T. Gwynne Maitland, the medical superintendent of the Cunard White Star Line, declares to be the only one which demands notice in any attempt to understand the essential and underlying features and source of the malady. "The other symptoms—nausea, vomiting, and prostration—are," he says, "common to many ailments but have no special significance other than that they are an expression of an acute perceptuo-emotive experience."

Following the teaching of the latest edition of Osler, Maitland insists that there is no essential difference between the symptoms of sea-sickness and those of air, train, and swing sickness; they are all consequent on some form of passive displacement, and the prominent symptom in all of them is vertigo.

"Passive displacement, called also imposed movement or deposition, is one of the problems connected with the maintenance of equilibrium. The maintenance of equilibrium is a primitive and vital necessity, making possible all purposive activities such as the acquisition of food, the attitude of attack and defence. The specific physiological response of failure is called disorientation; the psychological, vertigo. Vertigo is occasionally found to accompany conditions other than equilibratory dysfunction, such as constitutional, toxic, and traumatic, but its immediate precursor is invariably some interference with the centres controlling equilibrium, however primarily caused."

Maitland concludes that, "though the chief onus of sea-sickness is still borne by the labyrinth, the weight of evidence seems to point to the utricle rather than the semicircular canals as the chief offender."

Aetiological Factors

H. V. Forster, who followed Dr. Maitland in the discussion at the Royal Society of Medicine, analysed the various types of motion which may cause sea-sickness. These may be briefly summarized as:

1. Pitching.
2. Rolling.
3. Corkscrew motion—that is, a combination of pitching, rolling, and yawing.
4. Lurching.
5. Quaking of the ship in her length as she is struck by the seas.

Surgeon Commander Keevil (1935) stated that "sea-sickness is a condition of amphoneurotonia in which parasympatheticotonia predominates." In a later article he (Keevil, 1938) says:

"This generalization was based on observations made on cases in the Service, and can only be considered to apply to sea-sickness among men. In 1936 Hill, writing from a more varied experience in passenger ships, concurred that vagotonia predominates in men, but stated that his cases among women

and children were usually sympatheticonics. He distinguishes the latter from the former type by the presence in women of restlessness and broken sleep, and by the occurrence of nausea before the vomiting, whereas in the vagotonics there was generally no nausea. But, in addition to vomiting, they suffered from drowsiness, apathy, headache, and vertigo. This latter will be at once recognized as the usual service type. In such cases stress was laid on the treatment of this parasympatheticotonia rather than correcting the relative dystonia between parasympathetic and sympathetic, yet it must be apparent that, if the general hypertonia can be neglected, the imbalance of the vegetative nervous system can be equally readjusted by increasing sympathetic tone as by the exhibition of parasympathetic inhibitors."

Elder says that "sea-sickness is the symptomatic reflex result of certain psychical and physical factors acting concertedly in stages of varying individual ascendancy." The former may be summed up in a few words—the influence of suggestion. To certain unfortunate individuals the mere sight of a ship immediately produces nausea. Sometimes vomiting takes place shortly after embarkation while the ship is still made fast to the wharf. Other people are quite well until the ship starts, but become uncomfortable immediately port is left, and remain, if not actually sick, decidedly squeamish for the first few days. Others keep quite well during the early stages of the voyage, but as soon as the ship enters a locality notorious for bad weather, such as the Bay of Biscay, the Great Australian Bight, or the Bay of Bengal, they retire to their staterooms suffering from headache or discomfort, if they are not actually sick. It has been suggested that the movement of the ship on entering these famous bays was "the last straw," but Elder has often satisfied himself by official inquiry of the officer on the bridge at the time that there was actually less motion than hitherto.

Again, the sight and sound of others being sick often induces the process as a sort of sympathetic reflex. Even reference to the old sailor's silly cure for sea-sickness—to swallow a lump of fat pork tied to a string and then pull it up—has been known to produce emesis. The smell of oil, food, and stale vomit generally associated with small cross-Channel packet boats is often enough to bring on nausea, even before the ship has cast off. Elder reminds the ship surgeon that vomiting is a symptom and not a disease. He concludes that with regard to cause the evidence is strongly in favour of it being secondary to some stimulus of cerebral origin. What that central stimulus may be cannot as yet be definitely stated. The majority of observers locate it in the semicircular canals with a disturbance of the equilibration centre. Another theory locates the cause of sea-sickness in the visual centre. This contention was supported by Sydney Scott in the discussion at the Royal Society of Medicine in 1936. "Visual sensation," he said, "evidently plays a part; liability to sea-sickness diminished when the eyes were closed." Dr. Gwynne Maitland, in his reply to the discussion, admitted that visual factors in certain exceptional cases might cause vertigo.

"The passenger susceptible to sea-sickness might develop sea-legs by the end of a trip—for example, to Australia by sea. On disembarking, however, he might show clear evidence of insecurity and might even feel nausea. This, again, is an example of conditioned reflex or habit reaction. His visual sensations ashore betray him, his ocular movements anticipate movement of the solid earth, where none takes place, and his equilibrium consequently breaks down."

Against the visual theory are the well-known facts that attacks of sea-sickness occur in the dark and in the case of blind persons. A third theory locates the seat of trouble primarily in the digestive apparatus. There is little modern support for this notion, though it is true that sufferers from sea-sickness are often the subjects of chronic constipation and persons liable to gastric and intestinal "upsets." One thing is certain, that what is popularly called "biliousness," though not a primary cause,

prolongs and aggravates sea-sickness. Another factor, noted by Dr. Elder as far back as 1908, is the presence of a gynaecological or obstetric element in cases of troublesome vomiting at sea. I had in a recent voyage experience of a case in which the so-called sea-sickness was really the emesis of early pregnancy.

Dr. Elder has attempted to determine whether race has anything to do with the incidence of sickness. His long experience points to Jews, the Southern Irish, and members of the Latin races as the worst sailors. Happily for my seafaring proclivities I hail from Belfast and not from the adjacent Eire!

The average duration of a bout of sea-sickness is three days—which, as every sailor knows, is the average duration of a "spot of bad weather."

Age has considerable influence: children are largely immune, and one of the consolations of advancing years is that the tendency to sea-sickness diminishes. There are, however, certain people even among seafaring folk who never acquire immunity. The captain of the first ship in which I sailed as surgeon was always unhappy in bad weather, and Elder tells us of a shipmate—an officer of twenty-five years' consecutive sea service—who regularly kept his first two or three watches at sea after leaving port with a bucket by his side on the bridge, and was actually sick quite regardless of weather conditions. The only consolation to sailors with this failing is that it is a historical fact that the great Lord Nelson was always sea-sick on returning to the sea.

Several Treatments of Sea-sickness

All these preliminary remarks lead to the important question of treatment. One has only to turn to a recently published book like the *Dictionary of Treatment* to realize that there is no sovereign remedy for the condition. In a brief article no fewer than fourteen drugs are mentioned. One has not to be long at sea to realize that everyone has his own remedy. Byron is, I think, the only English poet who has tuned his lyre to the theme of sea-sickness. In *Don Juan* he tells us that the best of remedies against sea-sickness is a beefsteak.

The scientific general treatment of the complaint falls under five headings:

1. Posture.
2. Warmth.
3. Diet.
4. Beverages.
5. Dextrose.

Posture.—This is about the only point on which there is any sort of general agreement. The best position for the sea-sick man or woman is lying down. Many medical men advise their patients quite indiscriminately to get on deck and lie in their steamer chairs. This advice may be good if the patient has a stuffy inside cabin and if it can be assured that he or she is clad warmly enough and has sufficient rugs. It is quite superfluous in the case of a cabin passenger with a good airy cabin, especially if it is on the promenade deck and has a window instead of a port-hole.

Warmth.—The sea-sick person suffers from a good deal of vasomotor disturbance and always feels cold. I am satisfied that warmth is far more important for most women than fresh air. Men will wrap up when they are confined to a steamer chair, but flimsy silk "undies" and a smart coat are very little protection for female patients against icy Atlantic winds. Fortunately women like hot-water bottles, which can make up for clothing deficiencies.

Diet.—When the patient is in the throes of sea-sickness the mere mention of food leads to an exacerbation of his or her tendency to vomit. As the patient gets better the doctor must try and discover something that is fancied. Starvation will do no harm, but if the passenger fancies any article of diet let him, or her, have it. Cold pork and chutney, or corned beef and pickles, will sometimes

stay down when the daintiest sandwiches the pantry can produce are promptly rejected.

Beverages.—Food is *not* necessary but fluid *is*, so as to give the patient "something to be sick with." It is never a mistake to let the patient go without food, but it is always a mistake to let him go without fluid. Withholding food will often prevent vomiting; withholding fluid will only increase the patient's suffering from retching with nothing in the stomach to expel. Every beverage in the barman's store has been lauded by professional or lay advocates. Iced champagne is the most expensive, and in my experience the least effective. Mixed with stout in the form of "black velvet" it rarely fails to aggravate the patient's symptoms. Stout has many admirers, especially among third-class passengers.

I was in charge of women and children on a troop-ship many years ago. The weather from leaving Plymouth until we sighted the north coast of Africa was vile, and the suffering of the women culminated in the collapse of bunks which had been constructed to convert a freighter into a means of carrying human cargo. The women lined up when I visited their quarters and demanded to be put on shore. Kind words and a bottle of stout all round—combined with better weather—induced them to complete the voyage to India quite happily.

Neat brandy or iced dry ginger-ale, or iced water with a few drops of Angostura bitters, are the beverages which have given best results in my experience.

Dextrose.—Before embarking on the administration of drugs the surgeon should remember the usefulness of dextrose in a great many cases. The type of person who is subject to acidosis or ketosis is also liable to travel sickness. In these individuals the carbohydrate-fat metabolism is unbalanced, and there is a need for an easily assimilable carbohydrate that will alleviate their symptoms. Experimental evidence has shown it is a condition of hypochlorhydria in susceptible subjects that produces the sickness mentioned above, which occurs even before the voyage has been started. Now ketosis may be controlled by a regimen consisting of the abolition of fat and the administration of carbohydrate, and it is in such cases that glucose is of value. In my experience persons liable to sickness are benefited by large quantities of dextrose or even ordinary boiled sweets before the commencement of the journey. In many patients with mild symptoms the sucking of barley sugar improves their condition. Dextrose is therefore an extremely useful therapeutic remedy.

Treatment by Drugs

Passing to the consideration of drugs we find that about eight remedies stand out in the treatment of sea-sickness. They are:

1. The bromides.
2. Chloral hydrate.
3. Belladonna, its compounds, and its alkaloid atropine.
4. Chlorotone.
5. Hyoscine.
6. Cocaine.
7. Ephedrine.
8. Benzedrine.

The Bromides.—Many years ago Lauder Brunton recommended a drachm of bromide of potassium dissolved in a pint of iced soda-water to be sipped slowly. This drug is the principal ingredient of the well-known proprietary remedy "yanatas." Ship surgeons of my acquaintance rarely prescribed the potassium salt. The slow elimination of bromides is sometimes quoted as a drawback to their use. But in the not infrequent case of sea-sickness where unpleasant after-effects are apt to continue for a time on land this objection may be discounted. Even in protracted sea-sickness it is exceedingly unlikely for bromism to develop.

Chloral Hydrate.—Dr. Hill, with his vast experience as surgeon of the *Aquitania*, recommends the following:

R̄ Sodii brom.	...	...	...	...	5j
Chloral. hydrat.	...	...	...	...	3ss
Sp. chlorof.	...	...	...	...	q.s.
Aq.	...	...	...	ad	3j

Ft. mist. 5j every half-hour.

Now chloral hydrate has a twofold objection. First, it is an "irritant to the stomach" (Dilling, 1939). Secondly, it is a depressant to cardiac muscle and to the vasomotor centre. These risks need not be feared, however, as Dr. Hill says that "before there is any possibility of overdosage the patient drops off to sleep and thereby lengthens the interval between doses."

Belladonna, its Compounds, and Atropine.—The employment of belladonna and atropine in sea-sickness is well known to the laity. Most of my patients on an Atlantic luxury liner had provided themselves with pills, tablets, or capsules containing one or other of these powerful drugs. Macaulay (1938) says: "In vagotonic patients belladonna and its alkaloids are invaluable. The tincture (15 or 20 minims in repeated small doses) is more certain in its action and more free from unpleasant after-effects than either atropine or hyoscyne alone." The trouble is that a mixture is frequently not retained. In such cases Macaulay suggests that three or four drops of 1 per cent. atropine sulphate placed under the tongue from a pipette may be tried, but surely a hypodermic tablet is easier to administer in a ship's cabin. Twenty drops of genatropine have been suggested, but I have never seen the preparation on board ship. Keevil says that "belladonna has certain disadvantages," which he adds were not overcome, whatever preparation he used. It has a depressing effect and can produce slight mental confusion and impairment of memory; in some cases it is only effective when the toxic dose has been closely approached. He has tried the three proprietary preparations known as "bellafoline," which contains the total alkaloids of belladonna leaves in the form of malates; "belladonal," which is a combination of bellafoline and luminal; and "bellergal," a compound of bellafoline, luminal, and ergotamine tartrate. Keevil (1935) concludes that

"Bellergal would be an ideal drug for sea-sickness were the condition purely one of amphetamine, since the whole of the vegetative nervous system is equally depressed by this preparation. It is certainly of great value in the related condition of migraine, but in sea-sickness, where it leaves unaffected the disturbance of vegetative equilibrium, it has been only partially successful. All three drugs are, however, moderately effective through their vagotropic action, but all suffer from the limitations of belladonna."

Finally there is the new preparation "navigan," which is a combination of syntropan, a synthetic ally of atropine, and a sedative pyridine derivative. Very favourable reports on its use are available, but Keevil has been disappointed by his results.

Chlorbutol or Chloretone.—Described by Bellingham-Smith and Feiling (1931) as "one of the most valuable remedies," it is best administered in 5- to 10-grain cachets. One dose should be taken before embarkation and a second when the patient has settled down on board. I usually give 10 grains, as 5 is often insufficient. The effect of the chloretone may be enhanced by adding 5 grains of benzococaine ethyl *p*-amylobenzoate, which is better known under the trade name "anaesthesine." This drug is recommended to relieve the pain of gastric ulcer. The well-known proprietary remedies "mothersill" and "zotos" contain chloretone.

Hyoscyne.—This alkaloid is often preferable to atropine, as it acts as a depressant and not as a stimulant of the cerebral motor area. It diminishes movement and slows respiration, and a full dose produces sleep which lasts from six to eight hours. One-hundredth grain of hyoscyne hydrobromide sometimes succeeds when atropine fails.

I usually place a hypodermic tablet under the patient's tongue. As a rule this is preferred to a hypodermic injection, and rarely, if ever, increases the sickness.

Cocaine.—Burney Yeo recommends the following draught:

Cocain. hydrochlor.	...	...	...	gr. ss
Chloroform. pur.	...	...	...	℥xxx
Tinct. card. co.	...	...	...	5j
Aq.	...	...	ad	3iss

Ft. haustus.

Personally I have always avoided cocaine, as I have had before me the risks of general toxic effects from an idiosyncrasy to the drug. I would strongly advise the ship surgeon to avoid Burney Yeo's draught.

Ephedrine.—Ephedrine was suggested as a remedy for sea-sickness, but John Hill found that it was only useful in prophylaxis combined with atropine. I mention the drug as it was its failure which led Myerson and Ritvo to study the action of benzedrine (which resembles ephedrine in chemical constitution) on the gastro-intestinal tract, but has a dissimilar pharmacology.

Benzedrine.—Up till last year benzedrine, though it originated in Philadelphia, was apparently unknown to my American lay friends as a remedy for sea-sickness. It had not been tried by most of my seafaring medical friends to whom I mentioned it, so it may be of interest to point out that "beta-phenylisopropylamine sulphate," as it is scientifically described, "is a drug with a threefold action." As pointed out above, its therapeutic effects are somewhat similar to ephedrine.

1. It stimulates the central nervous system, including the higher cerebral centres, and has a powerful effect in relieving fatigue, depression, and lethargy. It is well known to pharmaceutical and medical students, who employ it with a view to getting the best out of themselves at examinations, but Dilling considers this use of the drug inadvisable as its cerebral effects vary with individuality.

2. It acts as a pressor to the vasomotor system, but this action is not sustained.

3. It does not affect regular peristalsis, but relieves spasm in the intestinal tract.

Obviously these properties commend the use of the drug in sea-sickness, but equally obviously such a powerful remedy must be used with care. It is contraindicated in excitable persons or in individuals suffering from insomnia. Hyperpiesia or any cardiac trouble and gastric or intestinal atony are equally strong contraindications. Dr. Hill has given the drug with the belladonna group of drugs and with the bromides.

He says, "Coincident vagal activity may be controlled by belladonna or counteracted by the sympathicotonic action of benzedrine." He began with an initial dose of 10 to 20 mg. of benzedrine sulphate. Thereafter "the dosage and intervals should be adjusted to meet the needs of the case. Benzedrine is best omitted in the late afternoon or evening, as its stimulant effect is usually prolonged; even 60 grains of bromide will sometimes fail to prevent insomnia."

Keevil, from very limited use in the Navy, regards benzedrine as a drug of promise, and he discounts the prominence given to the fear that some may learn to partake too freely of benzedrine. In this relation he points out that Guttman and Sargent (1937) and Wilbur and others (1937) have shown that the ecstasies fade with repetition. It is the unstable neurotics who need to be kept from drugs of addiction. These unfortunates, being at discord with life, crave one thing above all others—oblivion. The fact that benzedrine robs them of sleep will quickly make it unpopular.

My own experiences lead me to support the conclusions arrived at by Dr. John Hill and Surgeon Commander Keevil, and as the drug is American and the tablets are tasteless, which gives it a great advantage over nauseating bitter alkaloids, benzedrine is likely to be added to the medicine chests of Atlantic travellers. In medical hands

it is very useful in those cases which show signs of vagus hyperactivity, but it is a remedy against the promiscuous use of which ship surgeons should be on their guard.

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ACUTE PHLEGMONOUS GASTRITIS IN PREGNANCY

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Acute phlegmonous gastritis, also known as suppurative linitis or as submucous gastritis, is a rare disease, of which only some 200 cases are recorded in the literature, and none of these in association with pregnancy. The following case is reported because of the rareness of the occurrence of the condition in pregnancy and because of the difficulty in diagnosis to which the combination may give rise.

Case History

Mrs. A., a 3-para aged 32, had always been in good health, except for occasional attacks of erache, sometimes accompanied by discharge. She had had two previous pregnancies, with normal spontaneous deliveries of live children, weights unknown. There had been no miscarriages. She did not attend any ante-natal clinic.

The patient was admitted on January 27, 1939, with a history of persistent vomiting for the past week. Temperature 97°; pulse 128; blood pressure 120/80. There were signs of extreme dehydration. Her tongue was dry, brown, and furred, and she appeared to have lost weight. The urine had a specific gravity of 1022, was acid, and showed a slight trace of albumin. Acetone and diacetic acid were present, but no blood or bile. The heart and lungs were clinically clear. The abdomen was enlarged to about thirty-two weeks' size, without rigidity or tenderness. The pelvis was not examined. The case was diagnosed as pernicious vomiting of pregnancy.

For the first twenty-four hours she was given plentiful alkaline fluids with glucose by mouth, but no diet. During this time she vomited several times, mostly clear bile-stained fluid. Next day she was much improved: temperature 98°; pulse 110; blood pressure 120/80. A little light diet was ordered, but she did not have any appetite. She vomited once or twice. On January 31 she was still vomiting, and there had been no improvement. She was therefore put on a continuous rectal saline, containing 10 per cent. glucose and in addition pot. brom. 30 grains to each pint. She was also allowed sips of water by mouth. The vomiting became less,

and she slept well throughout the night. On February 1 salines were continued. There was no vomit, and her condition had improved. Blood pressure 120/70; pulse 90. The following day a profuse purulent odourless discharge came from the right ear. The patient was seen by the otologist, who diagnosed a chronic streptococcal otitis media. She was therefore immediately transferred to a surgical ward. Her general condition improved whilst away, but she continued to vomit at times. The ear condition cleared up, and she was sent home on February 24.

On February 27 she was readmitted at 10.30 a.m. She was then vomiting copiously, was collapsed, and looked very ill, haunted, and anxious. Her tongue was dry and furred, with sordes on lips and teeth; she had sunken eyes, and was restless, and complained of severe right upper abdominal pain. A slight aural discharge occurred from which a pure culture of a short-chained streptococcus was grown. The vomit was clear bile-stained fluid with no smell. Temperature 101.2°; pulse 140; blood pressure 105/65. On examination she was very tender over the right hypochondrium, especially the gall-bladder area. There was some guarding and rigidity of the upper right rectus muscle. No mass was palpable. At times the uterus appeared to be contracting, but this was difficult to decide because of the extreme tenderness of the abdomen. The foetus was palpable and the foetal heart heard in the R.O.A. position (rate 140). Per rectum the cervix was one finger dilated. There was a slight blood-stained loss per vaginam. The urine was clear except for a slight cloud of albumin: acetone and diacetic acid were present. The stools were normal, and the blood pressure was 100/60.

The differential diagnosis seemed to lie between acute cholecystitis and retroplacental haemorrhage. The height of the fundus was marked, and she was put on a half-hourly pulse and temperature chart. At 12 noon one-quarter grain of morphine was given, and was repeated in half an hour. Alkaline fluids with glucose by mouth were ordered, and continuous intravenous drip saline with 5 per cent. glucose was given into the antecubital vein. At 6 p.m. the fundus of the uterus had risen about two fingers above the level at which it had been marked at midday. The uterus was extremely tender to the touch and was of board-like hardness all over, as was also the whole hypochondrium now from side to side. The foetus was no longer palpable, but the foetal heart could still be heard. The morphine was repeated in the evening and at 11 p.m. The patient slept fairly well throughout the night, but in the morning was still very ill, with a running pulse of 160 to 170. The diagnosis of concealed accidental haemorrhage seemed the most likely one, and the question of Caesarean hysterectomy was considered, but owing to her extremely bad condition it was decided not to open the abdomen.

During the night and from the previous afternoon the patient had had about seven pints of fluid intravenously. About midday she showed signs of cardiac embarrassment and the drip was discontinued. Coramine 2 c.cm. was given, and the pulse steadied and regained volume. Later in the afternoon, at 4 o'clock, she was given 350 c.cm. of blood by the indirect citrate method with the addition of coramine 4 c.cm. Her condition improved. Morphine was repeated. At 11 p.m. her condition was still very grave, and the blood pressure 90/50. 300 c.cm. blood, with coramine, was repeated. The patient did not seem to respond, and she died at 3.30 a.m. on March 1, complaining to the end of acute pain over the stomach. Progressively, the abdomen appeared to become more distended and rigid.

Post-mortem Examination

The uterus and its contents were normal. There was a considerable peritoneal exudate, and in the upper abdomen the peritoneum was deeply congested and coated with flakes of lymph. The peritoneal coat of the stomach was deeply congested and the whole stomach wall swollen and firm. On section the wall of the stomach was increased in thickness to about half an inch, and this change was generalized, although most marked in the region of the pyloric antrum.