constructed at a distance of about two miles. The sewer-pipes from all the streets and houses have not yet been connected with the main sewers. When the entire system shall have been completed, the result will be as perfect and effectual an arrangement for the disposal of sewerage by water-carriage as can exist anywhere.

2. *Condition of the Air.*—The air of Bangor is particularly pure and bracing, consequent upon its situation on the sloping and indented southern shore of Belfast Lough; upon its surroundings (except on the seaward aspect) of open country, greatly diversified by alternate hill and vale, with occasional coppice or wood; upon the absence of all manufacturing establishments which could pollute the atmosphere with smoke, or the streams with poisonous filth; and upon the arrangement and steepness of the streets constituting the main thoroughfares of the town, which enable every breeze that blows to circulate freely, and to quickly dry the roads after rain.

3. *Water-supply.*—Hitherto the supply of water for Bangor has been derived from pumps or wells, either public or private. These, with such rain-water as could be stored, have furnished a fairly adequate supply for consumption and domestic purposes generally. The pump-water is pure, and free from organic matter, but, from every source, is hard, containing both carbonate and sulphate of lime in considerable quantities; iron is also present in several specimens. To meet the requirements arising from the rapid extension of the town, and the necessity for a continuous supply of water to flush the new sewerage works, to extinguish fires, etc., an extensive scheme for the provision of an ample water-supply has been entered upon by the sanitary authority, and is now all but complete. The reservoir is stated to be capable of containing enough pure water to furnish a supply of twenty gallons daily to five thousand persons for five months, and is situated on an elevation higher by forty feet than any habitation within the township.

4. *Death-rate.*—The population of the township, or urban sanitary district of Bangor, was returned at the last census as being 3,006. During the year 1884, the deaths registered as having occurred within the district during the first quarter of the year were 14 in number. During the second quarter, there were 13 deaths registered; and, during the quarter ending September 30th, 11 deaths. These figures correspond to an annual death-rate of about 16.8 per 1,000 of the population. It should be understood that, the census throughout the kingdom being taken during February, the population given above, on which the mean mortality is calculated, is that of the ordinary residents. The visitors in summer add enormously to the number of inhabitants; but as they cannot be conveniently reckoned, all deaths, whether those of permanent or temporary residents, are included as indicating the death-rate among the permanent population only, and so make the ratio appear somewhat higher.

Portrush.—This favourite and fashionable watering-place is situated almost at the extreme north of Co. Antrim. It has rapidly risen during the past few years, and has become widely known and very popular, on account of its close proximity to the world-renowned Giant's Causeway, and also from the excellent salmon-fishing to be obtained in the neighbourhood. The coast-scenery is unsurpassed in the world. An electric railway extends from Portrush to Bushmills, a distance of six miles in the direction of the Causeway, and recently powers have been obtained from Parliament to complete the remaining two miles. The sandy beach is one of the most beautiful to be met with anywhere. The sea is rather rough, the water is buoyant, and the air keen and tonic. Dr. Adam Clarke was born at Portrush; a monument has been erected to his memory on a hill overlooking the town. A quay affords accommodation to vessels of small tonnage, and steamers to Scotland leave twice weekly.

The death-rate is 15 per 1,000 of the population. The rainfall for 1882 was 47.65 inches, and for 1883, 44.68.

The following facts on air, sewerage, and water-supply are furnished by Dr. Macaw of Bushmills.

The air of Portrush is pure and bracing. It is a good deal exposed during the winter months. A scheme of sewerage is in progress which, when completed, will be very good. The soil is porous, and dries rapidly after rain. A new and ample water-supply has been recently provided. There are five good hotels, and a superior class of houses, let either in apartments or as furnished houses. The population in winter is 1,500; in summer, from 3,000 to 4,000.

Denluce Castle, midway between Portrush and Bushmills, is a ruin of great antiquity and much interest.

At Portstewart the air is pure and bracing; the sewerage is pretty good; and there is a fair supply of water from wells and pumps. There are two good hotels, and a good strand for promenade.

At Bushmills and Ballintra the air is pure and bracing, the sewerage

is good, and the water-supply fair from wells and pumps. There are hotels at Bushmills and the Causeway, each a mile distant. Bushmills is accessible from Portrush by the electric tramway. There are several furnished houses and houses let in apartments.

The sewerage at Ballycastle is defective, but the water-supply is pretty good. The scenery in the neighbourhood is beautiful. The place is accessible by railway, but there is very little accommodation for lodgers.

The Giant's Causeway Hotel is situated on a commanding eminence close to the Causeway, and is under excellent management, being conducted in connection with the electric railway. To those who want a tonic and invigorating atmosphere, with wild and beautiful coast-scenery, a week's residence here will be thoroughly enjoyable. Of the Causeway itself, it is not necessary to speak here. Being one of the wonders of the world, everyone has a desire to see it. Its curiously formed pavement, its wonderful caves, its charming bays and bold headlands, have been the theme of visitors for more than two hundred years. Time has not deprived them of any of their beauty, nor description made their study any the less interesting.

Portrush being the "Brighton of Ireland," and the Giant's Causeway an unsolved geological problem, with the only electrical railway in the world lying between them, it is not surprising that this is one of the most attractive health-resorts in Ulster.

CASE OF APHASIA IN WHICH THE CHIEF LESION WAS SEATED IN THE SUPRAMARGINAL AND ANGULAR GYRI, BROCA'S CONVOLUTION BEING UNAFFECTED.

By SAMUEL WEST, M.D., F.R.C.P.,

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HENRY H., aged 66, a painter, was admitted into the Royal Free Hospital with an attack of bronchitis. Except from occasional attack of gout, he had been in good health until one year ago, when his breath became short on exertion, but he was not laid up until his feet began to swell about two weeks before admission.

The patient was rather stout, but of a sallow pallid colour; the face was slightly puffy, and the legs oedematous; loud rhonchus and sibilus were audible over the whole chest; the heart was extremely feeble, and the cardiac dulness increased to an inch to the right of the sternum; there was no murmur; the veins of the neck were turgid; the liver did not appear to be enlarged; the urine contained a small amount of albumen, and the arteries were hard. The case was regarded as one of bronchitis, with a weak dilated heart, consequent upon granular kidneys.

The patient improved considerably under treatment until January 21st, about three and a half weeks from his admission, when, at 6 A.M., he was discovered by the nurse to be unable to speak. Nothing had occurred during the night to attract attention to him; and, except for his aphasia, he seemed to be in his usual health.

On examination, during the morning, incomplete right hemiplegia was discovered, the loss of power being more marked in the leg. The patient appeared to be in comfort; and, in general health, to be, on the whole, better than before. He was cheerful and happy, but he understood very imperfectly what was said to him, and, in reply to questions, he muttered gibberish, though he often repeated the words "Yes," "Well." The movements of the tongue were free and symmetrical; the pupils were equal, and reacted normally to light and to accommodation. There was no paralysis of the eye-muscles, and the discs were normal. Only a slight loss of power on the right side of the face was to be detected. The urine was passed involuntarily, and the bowels were confined. With reference to the right arm, the note taken ran as follows: "There is a good deal of inco-ordination of the right hand."

January 22nd. The patient's condition was the same, but he had not slept at all. On being asked to put out his tongue, he would move it about in his mouth, but not protrude it, showing that he partly, at any rate, understood what was required of him.

January 24th. For the last two nights the patient had slept well, though to-day he was drowsy and heavy. A condition of incomplete hemianesthesia on the right side was discovered, affecting also the right half of the face.

January 25th. The patient could make use of a few more words, but did not understand completely what was said to him.

January 26th. The patient said "good morning," "corner," "very well," "order," "one, two, with it," indiscriminately, in response to questions, although he seemed to understand that he was answering foolishly. He would try one after another of these expressions, and when he found that none was the right reply, he would shrug his shoulders, shake his head, and say, with a laugh, "Oh Lord, oh Lord," as if amused with his ineffectual efforts. Occasionally he would say "I can't," "I couldn't," "I could," but always in answer to questions, as if indicating his sense of inability to do what was wanted. The phrases which were most used were "good morning," "corner," "order;" and, when writing or printing was shown him, he always turned it so as to be right side up, and said "one, two, with it." These expressions were thought to be those in constant use in his occupation, which was that of a carrier. The paper probably suggested the invoice, and "one, two, with it" the number of packages to be delivered with it, while "good morning," "corner," and "order" would be expressions of commonest use in his business. Writing or printing conveyed no distinct meaning to him, although it was clear, from his always holding the writing or printing in the proper position, that he recognised the symbols, though he failed to attach any meaning to them.

January 28th. The patient had a good deal of fresh bronchitis, and much dyspnoea. He had lost appetite, and slept badly. He lay always upon his left side, and when sitting up always inclined to the left side. Four dry cups upon the back relieved his dyspnoea much.

January 29th. The patient passed a very bad night, and in the early morning became so restless that two men became necessary to keep him in bed. Later, he became quieter and drowsy; he vomited a little. The breathing became difficult, and there was some cyanosis. The left hand was oedematous, but he had been lying on it. The pulse was 84, weak, and very irregular; the temperature throughout was not raised.

February 6th. During the last week the patient had slightly improved. He was now more intelligent, and answered simple questions fairly rationally, if they did not require much more than "yes," or "no." When asked to put out his tongue, he moved his tongue about in his mouth, but put out his hand.

February 12th. To-day he produced his tongue when asked, and it was protruded straight.

February 28th. For the last few days there had been a gradual increase in weakness. The face had become more puffy, and sleep and appetite were poor.

March 1st. The patient was rapidly losing ground. He had hardly slept at all for two nights.

March 5th. The patient died quietly at 1.30. The urine had been reduced to about eight ounces during the last twenty-four hours. The eyes had been frequently examined; there was no affection of external muscles, and no retinal change. Vision appeared good, but I am not sure whether each eye was tested separately, though I think this was done. The hearing, also, so far as could be ascertained, was unaffected. The condition of hemiparæsthesia remained unchanged throughout. The patient's death occurred exactly six weeks after the attack of aphasia.

The *post mortem* examination, made twenty-four hours after death, disclosed the following conditions. There was considerable general oedema, and dropsical fluid in the peritoneum (moderate) in both pleura (considerable) and in the pericardium (slight). The lungs were oedematous, and partly collapsed. The aorta was extremely atheromatous, and the arch dilated. The heart was generally dilated. The left ventricle was hypertrophied, and slightly fatty. The left coronary artery was much obstructed at its origin by atheroma, and the mouth of the right completely obliterated; although this artery was pervious, and of rather unusually large size, even up to its origin from the aorta. The liver was slightly cirrhotic; the spleen was small and hard. The kidneys were small and granular.

Brain.—On removing the dura mater, the meshes of the pia mater were seen greatly distended with serous fluid (true dropsy). Both veins and arteries contained but little blood. On removing the brain, a good deal of serous fluid escaped from the spinal canal. On the left side of the brain, corresponding with the whole extent of the supramarginal and angular convolutions, was a large area of softening, considerably depressed below the level of the rest of the cortex. The colour was pale yellow, and the surface was speckled with small patches of white and yellow (fatty change). No evidence of disease of the vessels, other than atheroma, was evident at the base. The distribution of the softening pointed to plugging of the distal portions of the Sylvian artery as the cause of the lesion, but the proximal portions of the vessel were pervious. All the convolutions of the left hemisphere looked smaller than those of the right, but the difference

was most marked in the convolutions adjacent to the fissure of Sylvius, namely, those on the lower part of the frontal lobe, the supramarginal and angular, which were softened and depressed in the manner already described, and the convolutions of the temporo-sphenoidal lobe, especially the superior. The parietal lobe was the seat of the greatest change; even the superior parietal lobule was markedly smaller than on the right side; but, with the exception of the region of softening, the convolutions did not appear affected otherwise than in respect of size.

After the brain had been hardened in spirit, vertical sections were made corresponding with the lines drawn in the figure. Upon the surface of the brain, the softening was bounded above sharply by the intraparietal fissure; in front, by the posterior border of the root of the ascending parietal convolution; posteriorly, by the upper part of the posterior extremity of the first temporo-sphenoidal fissure, and inferiorly, by the posterior third of the fissure of Sylvius, and by a horizontal line drawn from the tip of the Sylvian fissure to the top of the posterior portion of the first temporo-sphenoidal fissure.

The vertical sections showed the softening to extend somewhat beyond these limits. Section 5 passed, as nearly as possible, through the centre of the supramarginal convolution. Section 3 corresponded with the posterior border of the root of the ascending parietal convolution; Section 7, with the posterior extremity of the angular gyrus. Sections 4 and 6 were about midway between these three. Section 2 corresponded with the inferior extremity of the fissure of Rolando. Section 1 corresponded with the ascending ramus of the fissure of Sylvius.

It was corresponding with sections 4 and 5, that is, with the middle and adjacent portion anteriorly of the supramarginal convolution, that the softening was most extensive, both superficially and deeply. Here it involved all the white substance corresponding with this convolution, and was about one inch in depth. The deeper portion of the immediately adjacent parts of the superior temporo-sphenoidal convolution, as well as of the superior parietal lobule and ascending parietal convolutions, were softened and yellow, but the change did not reach to the surface.

Superficially, the softening did not seem to extend anteriorly beyond the posterior border of the ascending parietal convolution; but the sections showed that it extended into the root of the ascending parietal convolution, and also that the portion of the superior temporo-sphenoidal convolution adjacent to the fissure of Sylvius was involved, and that the softening had affected the whole surface of the island of Reil, though it did not extend far into the white substance of the convolu-

tions in this place. Farther forward still, corresponding with section 2, the softening was limited to the surface of the island of Reil, which was, however, still affected throughout its whole extent on the section. The claustrum could still be easily distinguished, but it was not so sharply marked off from the convolutions of the Insula by the white band as upon the opposite side. The external capsule appeared perfectly intact throughout. Broca's convolution had entirely escaped. The posterior limits were rather more difficult to define, but here the softening extended rather further superficially than it did deeply. Superficially it reached the bordering convolutions connecting the angular gyrus and occipital lobe, but deeply it did not extend quite so far. The superior temporo-sphenoidal convolution was softened in the deeper part of the Sylvian fissure for the posterior two-thirds of its extent, and for a short distance from the spot posteriorly where the supramarginal and angular convolutions became continuous with it. I have indicated upon the figure, by means of vertical shading, the deeper portions of the convolutions which were affected.

The vessels could not be dissected in the fissure of Sylvius, without destroying the relation of parts, but the destruction produced by the lesion agreed exactly with the distribution of the peripheral branch of the Sylvian artery, and it is fair to conclude that it was caused by plugging (probably embolism) of the vessel, as the accompanying diagram clearly demonstrates. (See previous page.)

The prominent symptoms of the case were aphasia, commencing suddenly, and unaccompanied by loss of consciousness, associated with paresis of the right arm and leg, and of the right side of the face, and with incomplete hemianæsthesia.

Taking the classification of aphasia into the ataxic and the amnesic form, it is clear from the clinical phenomena to which group the case belongs. The motor-centres were not affected. All the movements necessary for the production of speech were possible. Some words the patient still retained, but these, as has been stated, belonged rather to the automatic or emotional class, such as, "Oh, Lord!" "yes," etc. Others, again, were in such common use in his occupation as to have become probably almost automatic, such as "good morning," "corner," "order." At other times, either in response to questions, or when attempting to read, he would give utterance to sounds which, in rhythm and sequence, so closely resembled language that the patient was thought to be speaking Welsh, as he was able to do before his illness, but it turned out to be only gibberish.

It is evident from these facts that the various movements necessary for speech were possible, even of the most complex kind, but that they were not rightly co-ordinated and associated. The case was clearly, therefore, not one of motor or expressive aphasia, but belonged to the amnesic group.

The various receptive or sensory or impressive centres were, however, affected in very varying degrees.

The visual speech-centre was profoundly involved. When an object, such as a pen, was shown to the patient, he was entirely unable to recall its name; though it clearly suggested to him the appropriate idea, for when it was given him he would take it rightly in his hand and make movements, as if for the purpose of writing, although nothing was produced but meaningless scratches. When writing or printing was given him he would turn it the right way up, and look at it as if endeavouring to understand it. He clearly recognised the symbols, though he failed to attach any meaning to them. Sometimes he would proceed to read; but, if words were produced, they would be simply those simple expressions before mentioned, or else an unintelligible gibberish, which had no relation whatever in length or rhythm to the sentences before him.

The auditory-centre was involved, but in a much less degree. The patient understood much that was said to him, as he showed by giving the hand, putting out the tongue, or taking something when told to do so; but the power of response to such orders varied very greatly at different times. Sometimes the patient was capable of imperfect parrot-speech, being able to repeat some simple word or two, when they were spoken to him, but this was unusual; more commonly if he made the attempt, the result was the same as on trying to read, namely, either the set words or gibberish. The state of the patient prevented any detailed examination of other senses, but the condition of hemiparæsthesia was easily made out.

The pathological lesion found, confirmed all the clinical anticipations. The motor speech-centre, that is, the convolution of Broca, had entirely escaped, and the lesion was confined to the region of the brain posterior to the fissure of Rolando. The lesion was most marked in the supramarginal and angular gyri, being here of the widest superficial extent, as well as also of the greatest depth. This is the region where the visual cortical centres are placed.

The supramarginal or superior temporo-sphenoidal convolution was

also involved, but to a much smaller extent, and only in the immediate neighbourhood of the fissure of Sylvius. This is the place where the centre of hearing is localised. Hence we have, as we anticipated, the chief lesion in the centre of vision, and a well marked, but less extensive, lesion in the centre of hearing.

But the lesion is seen below the surface to extend somewhat further. 1. In front it reached into the root of the ascending parietal convolution. Here Ferrier places certain movements of the opposite side of the face and mouth, and we have, in the lesion, an explanation of the loss of power observed in the face. 2. Above, it reached the upper portion of nearly the whole ascending parietal convolution. In the middle portion are placed by Ferrier the centres for the finer movements of the hands and fingers (the prehensile movements), and it was exactly these which were most affected in our patient. In the parietal lobule, or upper part, are placed centres for some of the movements of the leg, and we have, in this lesion, an explanation of the loss of power in the leg.

The cortical lesions thus explain, most satisfactorily, both the aphasia and the hemiplegia. The sense of touch is placed by Ferrier in the uncinate gyrus and in the hippocampus major. Considering the close proximity of these convolutions to the fissure of Sylvius, it is possible that we have, in a lesion of these parts, the explanation of the hemianæsthesia, for the internal capsule had completely escaped. The objection to this view lies in the fact that their blood-supply is derived, it is stated, from the posterior and not from the middle cerebral artery. Moreover, if these parts were involved, it must be to a very slight extent, for they appeared quite natural to the naked eye. Hemianæsthesia is a not uncommon symptom in aphasia when the internal capsule is uninjured, whatever explanation of its causation be given.

The last point of interest is the extensive lesion of the island of Reil; but the functions of this part of the brain are very obscure, and it is impossible, at present, to associate with this lesion its appropriate clinical symptoms. The case, in its entirety, affords very interesting confirmation of some of the present doctrines of cerebral localisation.

ONE THOUSAND MIDWIFERY CASES WITHOUT A MATERNAL DEATH.

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THERE is nothing wonderful in a thousand midwifery cases without a maternal death, but there are some interesting points in the complications I have tabulated.

1. Forceps	48
2. Turning	11
3. Placenta prævia (complete)	3
4. Placenta prævia (partial)	2
5. Post Partum Hæmorrhage	5
6. Accidental Hæmorrhage	1
7. Retained Placenta	15
8. Puerperal Convulsions	5
9. Hand Presentation	3
10. Breech Presentation	8
11. Funis Presentation	2
12. Foot Presentation	5
13. Craniotomy	3
14. Puerperal Fever	5
15. Twins	4

1. Many practitioners will think my percentage of *forceps* cases unusually high. According to Dr. Meadows, the percentage in Germany is 1 in 106, in this country 1 in 115. I may say I have never applied the forceps except in cases where I thought it absolutely necessary.

2. *Turning* has in my practice been above the average; 11 in 1,000, against 1 in 124. I turned five times in placenta prævia, three times in hand presentation, twice in funis presentation, and once in puerperal convulsions.

3 and 4. *Placenta Prævia*.—My percentage is high, 5 in 1,000, whereas 2 in 1,000 is about the average. Three of my cases were complete, the other two partial.

5. *Post Partum Hæmorrhage*.—I have only noted those cases which caused me much anxiety; hence my percentage seems low.

6. *Accidental Hæmorrhage*.—I have only had one case.

7. *Retained Placenta* (15 cases).—Five were due to hour-glass con-