subject to the elaborate treatises of St. Lager,⁶ Baillarger,⁷ Nivet,⁸ Hirsch,⁹ Bircher,⁹ and others.

[The influence of habits of life, exertion, heredity, and intermarriage were then briefly discussed.]

Summing up, there can be no doubt that climatic and atmospheric conditions have little or no share in the causation of goitre. That want of air and sunshine has absolutely nothing whatever to do with it is equally certain. Habits, such as carrying weights on the head, violent exertion and the like, play but a secondary part in the production of the disease. That heredity is a cause of goitre is extremely doubtful. Intermarriage has almost certainly no share in its causation.

That there exists some definite relation between goitre and some poison in the soil upon which it is found is tolerably clear, and there can be no doubt that in the vast majority of cases drinking water is the vehicle by means of which that poison obtains access to the body. Such water is usually, if not always, derived from calcareous soils, but that it is probable that the goitre-producing poison is not a salt of lime or magnesia. It has not yet been proved satisfactorily that any salt of iron is the essential constituent. The same may be said of organic matter.

For my own part, I am inclined to believe that the cause will be found to lie in one of the mineral ingredients of drinking water, probably not a salt of iron, but possibly one of the alkalies or alkaline earths, not lime or magnesia. I put forward this belief, however, with the utmost diffidence and hesitation, feeling that at present such evidence as I have does not warrant me in expressing a strong opinion upon the subject.

[Some of the chief symptoms of goitre were then briefly discussed, and especial stress was laid upon the mode in which different kinds of goitre distorted and displaced the trachea (see Fig. 2). Reference was made to a former paper in which this subject had been treated more fully⁹. The effect of goitre upon the duration of life was briefly discussed, and it was concluded that in the great majority of cases the disease did not shorten life. In some cases, however, especially among young people, the pressure upon the trachea was enough to cause death. A long list of such cases that had been collected by the author was referred to. In elderly people, although goitre was less often directly the cause of goitre, yet it sometimes did shorten life very considerably by diminishing the calibre of the trachea so much that if bronchitis or other similar disease supervened, the patient had a much smaller chance of recovery.]

THE COMPLICATIONS AND SEQUELÆ OF INFLUENZA.¹

By FRANK NICHOLSON, M.D.LOND.,
Physician to the Hull Royal Infirmary.

THE two recent epidemics have given everyone in practice the opportunity of seeing a large number of cases of influenza—a disease which was quite unknown to any but the older members of the profession. Late in December, 1889, this affection, which had been slowly spreading across the continent of Europe from east to west, and which already had reached England a few weeks previously, made its appearance in Hull, spread rapidly, and after raging for several weeks and affecting a large number of the population, slowly subsided, finally vanishing almost as suddenly and mysteriously as it had arrived. As there had been no epidemic in England since 1847, it was a reasonable hope that we might long be spared another visitation, but towards the end of March in this year it was too obvious that we had to face a further epidemic of influenza, which had apparently chosen Hull as the starting point for its English travels, and which promised to be far more widespread and serious than its immediate predecessor. In April many thousands of cases occurred in the town, but early in May they became less numerous, and the epidemic

subsided almost as quickly as it had sprung into existence. I am probably below the mark when I hazard the opinion that quite 40,000 persons in Hull suffered from the disease during the recent outbreak, whilst in many of the East Riding villages almost every house furnished one or more patients.

Though influenza makes a patient feel extremely ill, it is rarely fatal by itself, death, when it occurs, being due to some complication. The symptoms both in last year's epidemic and in the one through which we have just passed, though they varied considerably in different cases and even in the two epidemics, can easily be grouped around a common description.

The illness usually commences somewhat suddenly, with heats and chills and a tendency to shiver, but actual rigors are not common. Severe headache, chiefly frontal and in the backs of the eyeballs, attended often by giddiness, quickly follows, and there is great prostration. With these symptoms one usually finds severe lumbar backache and pains in the limbs, and often a hacking cough, whilst in some cases there is sore throat, coryza, and lachrymation. Occasionally at no period is the temperature raised, but as a rule the mercury rises quickly to 101° or 102° or higher. The pulse, however, often remains quite slow throughout. The tongue generally gets much coated, but is rarely dry in the uncomplicated disease, and there is complete anorexia and perversion of taste; drowsiness is not uncommon, and depression of spirits very usual. The patient refuses all food, and thinks the best champagne unmitigated filth, whilst his views of life are gloom itself. If no complication arise, the disease is quickly at an end, generally in three or four days, but convalescence is always tardy, the physical weakness lingering for a long time, and the patient remaining flat and depressed. I do not find in the textbooks any very full account of the complications and sequelæ, and, as these are exceedingly important, some little consideration of them will be no waste of time.

Those affecting the respiratory organs, alike from their frequency and from their often fatal character, take the first place. The most common of all is bronchitis. It may be only trifling in degree, affecting the trachea and larger tubes; but there is a great tendency for the inflammation to creep into the smaller tubes, placing the patient in the greatest peril, and too frequently proving fatal, especially in the very young or the very old, and in those who previously had been out of health. I have seen a great many severe cases of this complication, and in contrasting it with an ordinary bronchitis have remarked: (1) That the cough is of a specially irritable and hacking character, and is peculiarly troublesome; (2) that the expectoration soon becomes copious, the sputa consisting of greenish-yellow masses, which are particularly thick and tenacious, and cling with great pertinacity to the receptacle, and when floating in water often resemble, as Dr. Peacock has pointed out, some of the large oolitic limestones; (3) that there is often very considerable difficulty in coughing up this thick sticky secretion, which is very apt to clog the bronchi; (4) that dyspnoea is often very urgent, the breathing being of a peculiar blowing and panting character; (5) that on physical examination the front of the chest reveals but few rhonchi, whilst at the bases posteriorly moist râles are most abundant, the area over which they are heard steadily rising in height as the disease advances; (6) that it is exceptionally rebellious to treatment; and (7) that on *post-mortem* examination the lungs are extremely inflated, and, instead of collapsing when the thorax is opened, seem actually to protrude.

The next most frequent complication is pneumonia, which may be either lobular or lobar. In the former it generally assumes a slow creeping character, and is usually grafted upon an existing bronchitis. Lobar pneumonia is often met with. I have seen a good many cases, and have observed in contrast with an ordinary acute pneumonia: (1) That the physical signs are often less pronounced; there is frequently not that large area of wooden dulness or loud tubular breathing that is commonly met with; (2) that the sputa less commonly are characteristic—rusty sputa are exceptional, the tinging, if any, being ill marked; (3) that dyspnoea is often an urgent symptom, and frequently of a deep and laboured character; and (4) that there is generally, combined with the pneumonia, a considerable amount of bronchitis, far in excess of what is usually seen in acute pneumonia. This

⁷ *Enquête sur le Goitre et le Crétinisme*, Paris, 1873.

⁸ *Geographical and Historical Pathology*, 1885, vol. ii.

⁹ *Path. Soc. Trans.*, 1890.

struck me very much in three cases which I saw in 1889, before I recognised that influenza had reached us.

Both bronchitis and pneumonia have been very common complications during the 1890 and 1891 epidemics, and my own observations lead me to think that whilst pneumonia was the more common and the graver trouble in the first visitation, in the recent outbreak bronchitis has been more frequently met with and of more serious import.

Pleurisy is occasionally met with, but it is not a very common complication; when it occurs the effusion is very apt to become purulent and form an empyema.

Speaking of phthisis as a sequel, Dr. West remarks that about one-fourth of all the cases of phthisis treated at St. Bartholomew's in 1890 attributed their illness to a previous influenza. My own observations are not sufficiently extensive to be of much value, but I think influenza seems to have a distinct influence in determining the development of consumption.

Hæmoptysis independent of phthisis or other pre-existing disease has been reported, but I have only met with one equivocal case.

Of the complications affecting the circulatory organs cardiac weakness is the most frequent—a feebleness of the heart muscle in which fatal syncope is apt to occur, and which often needs protracted rest for its amendment. Pericarditis is now and then met with, but endocarditis hardly ever if at all.

Phlebitis has occurred in a few cases, chiefly affecting the femoral vein.

The digestive organs are frequently affected. Vomiting is not at all uncommon at the commencement, and I have known it the first symptom in several cases. It usually soon subsides and is generally independent of any structural change in the stomach, but now and then there is actual gastritis, and occasionally hæmatemesis. Atonic dyspepsia, from which the patient may not have suffered for years, is often recalled into existence; whilst momentary waves of nausea now and again distress him for some weeks. Diarrhœa occurs in some 8 or 10 per cent. of the cases, sometimes very slight and needing but little treatment, whilst on the other hand it may be most severe and obstinate with the discharge of mucus, membranous flakes, or even sloughs and blood. In the more severe forms of enteritis meteorism to a considerable degree is frequent. The severer cases of enteritis in the epidemic of 1847 were most frequently met with in conjunction with pneumonia, and, grave as they appeared, generally recovered. Recently I saw a lady of 72, who had an apex pneumonia as a complication followed in a few days by a severe membranous enteritis with very considerable tympanites. From these she was slowly recovering, the lung having cleared and the abdomen having nearly assumed its normal dimensions when cystitis set in and proved fatal.

Jaundice would seem to have been a commoner complication in the 1847 epidemic than in the two most recent ones. There is usually with it a heavy dull pain over the right hypochondrium, with tenderness over the edge of the liver. It does not seem to be a symptom of grave import, and I do not think that any serious liver disease has been met with. Peritonitis is mentioned as an occasional complication.

The urinary organs usually escape any implication. Scanty high coloured urine is the rule, and occasionally a little albumen, but nephritis or permanent kidney trouble would seem to be rarely if ever seen. Hæmaturia now and then occurs, but is rarely serious. I have seen one case of severe cystitis, and Dr. West mentions having had two or three slight cases in the 1890 epidemic. Severe menorrhagia is occasionally the result of influenza, but it would seem to have but little tendency to produce abortion.

The complications affecting the nervous system are of considerable interest. In the epidemic of 1837 drowsiness was so frequent that "sleeping sickness" was a common synonym. In the recent outbreaks, though exceptional, it has occasionally been a special feature, whilst in some cases there has been deep coma. Occurring early in the disease so alarming a symptom as profound coma would seem to be much less serious than might be expected, recovery generally taking place, but later in the case it is of grave omen. I saw one case, a woman, aged 42, who was moribund, and who died two hours later. She had been ill only a week from in-

fluenza, there being tonsillitis at the commencement. Two or three days before her death the headache became much more severe, and thirty-six hours before the end drowsiness supervened, passing into deep coma. There was no vomiting, no convulsions, no paralysis, and no rigidity of neck or retraction. Dr. Close, with whom I had seen the case, asked me to the *post-mortem* examination, which revealed extensive meningitis, there being a good deal of lymph becoming purulent over the temporo-sphenoidal and parietal lobes on both sides, especially the left, and also some at the base, spreading on each side into the Sylvian fissure. The pia mater was very cedematous and much congested all over the hemispheres, and there was a considerable excess of serum. Dr. Brown mentions having met with three fatal cases of meningitis in the 1837 epidemic, and Dr. Parkes, in his article in *Reynolds's System*, in half a line remarks that "meningitis very rarely occurs." With these exceptions, I hardly find any reference to meningitis in the literature of influenza. I may add that Dr. Close had diagnosed the case as one of meningitis before I saw it, but knowing the extreme rarity of the complication I hesitated to express a decided opinion. The *post-mortem* examination proved that he had been perfectly right.

A much more common sequel is neuralgia, generally affecting the fifth nerve, and especially its first division, but also the intercostal nerves and those of the extremities. These neuralgias are often very obstinate. I may further mention that a long forgotten neuralgia is occasionally brought again to light by an attack of influenza. I have not met with chorea as a sequel, but some cases have been recorded. Great muscular weakness and prostration are exceedingly common, but distinct paralytic attacks appear rare. In some few cases the loss of power depends upon peripheral neuritis.

The depression of spirits which attends and generally follows influenza has already been referred to, but I cannot find that insanity, which is a sequel of great importance, has received even a passing notice in the textbooks. I have seen three cases during the recent outbreak, and several others have come under my notice, whilst in the newspapers from time to time a suicide has been recorded following upon an attack of influenza. Both mania and melancholia are met with, and in many cases there is a strong suicidal tendency. In the three cases I have seen the period elapsing between the commencement of influenza and the development of mental symptoms has varied from two to four weeks. In one of them the early symptoms were obviously hysterical; the patient talked foolishly and erratically, maintained she was hypnotised, and was very troublesome. She became more and more unmanageable later, and I hear it became necessary to place her under restraint. In the second case the symptoms for a few days took the form of monomania. She had recently returned from Canada, where she had seen the St. Lawrence frozen over. In her imagination her dearest friends were crossing, when the ice commenced to break up, and they seemed to her in the most imminent danger. For several days her mental anguish was extreme, her urgent plea being that we should all rush at once to their assistance. I saw this patient a month ago, and am glad to hear that it did not become necessary to place her under restraint, and she is now convalescing. In the third case, which I saw a week ago, mental symptoms came on four weeks after influenza, and had existed for one week when I saw her. The patient was low and depressed, difficult to manage, acting strangely, and on one occasion had gone out into the street in her night-dress. I fear removal to an asylum will be a necessity very shortly. All the three cases I have seen were women, and three others which have occurred in the practices of two of my friends were also women.

A good deal has been written about the eruptions occurring in influenza, but any rash at all is quite the exception. The commonest is herpes, of which I have seen several cases. It generally occurs on the lips, but may follow an intercostal nerve or appear elsewhere. It has no necessary connection with pneumonia; in fact, I have seen it more frequently in uncomplicated cases.

Erythema is met with usually in two forms: the one resembling the rash of scarlet fever, the other more like that of measles. I saw one remarkably like a scarlatina rash. The illness was ushered in by vomiting, the temperature rose to

102°, and the following morning a scarlet erythematous rash appeared on the chest, spreading over the neck and abdomen. There was a slight amount of angina, and the patient being a child of 4 I was in some doubt as to the diagnosis, but the next day settled this, for the rash had all vanished, the temperature had fallen, and several other cases of influenza rapidly occurred in the house. These erythematous eruptions are generally very shortlived. Dr. Hawkins reports seven cases in which the elbows and knees were almost solely affected. Urticaria, papular eruptions, and purpuric spots are reported as occurring, but I have not met with any of them.

It is important to remember that antipyrin, the salicylates, and quinine occasionally give rise to rashes, and to exclude this source of fallacy. I have myself had several boils as a sequel, but except in one Lincolnshire village I cannot find that they have occurred in the practice of others. Muscular cramp, especially in the calves, is common for a few weeks during convalescence, and in some cases the anterior abdominal muscles just along the costal arch are the parts affected. Now and then distinct swelling with effusion into the joints occurs resembling a subacute rheumatism, which is obstinate to treat. Glandular swellings are met with occasionally affecting the lymphatic glands, the parotid, or the testis, which sometimes go on to suppuration, and in some cases the salivary secretion has been suppressed even for a lengthened period.

Tonsillitis is pretty common as a complication, and is often severe, but suppuration does not often take place. Laryngitis, too, is frequent, but is hardly ever a serious complication except in young children, and seems rarely to produce great obstruction, or to need tracheotomy. Epistaxis in moderate amount is fairly frequent and of little importance, but now and then it is severe, and even alarming. Post-nasal catarrh is a sequel that causes much discomfort, owing to the thick tenacious character of the secretion, and is common, whilst ozæna, though occasionally met with, is rare. The former is a considerable trial to the patient, the latter to his friends, but in both instances ultimate recovery is fortunately the rule.

The affections of the ear are important. Slight deafness without pain, due to the trumpet-shaped end of the Eustachian tube becoming closed from the swollen condition of the mucous membrane of the pharynx, is frequently met with, and in a small proportion of cases the inflammation travels into the middle ear, causing intense pain, and generally followed by rupture of the membrane and a free discharge of pus. I have seen two or three cases which ultimately did well, leaving, however, a little deafness. One ear only or both may be affected. The eyes during the last two epidemics have been largely spared anything beyond some slight conjunctivitis, but in a few cases ulceration of the cornea has been met with. I have not seen any case in which suppuration occurred in the eyelids or tissues about the eyeball, but in some epidemics they were occasionally seen.

Relapses of influenza are, in my experience, distinctly exceptional, and a large number of those who suffered in the 1890 epidemic have escaped in the recent one, though no protection is said to be afforded by a previous attack. Recrudescences are common enough where the patient has ventured out too soon, but these must be distinctly separated from relapses.

After passing in review this alarming list of possible complications and sequelæ I have but little to add. I incline to the belief that influenza is not infectious but due to some impurity, probably chemical, in the air, which appears to affect the nervous system most powerfully. Many of the complications of influenza may possibly be caused through nerve agency, through the effect of this poison on the pneumogastric, abdominal sympathetic, and other nerves; but the whole question of the etiology of influenza and the mode in which it spreads is still a mystery, and we can only hope some light may ere long illumine the darkness that enshrouds it.

A CONVERSAZIONE will be given by the Royal Society on June 17th.

BEQUEST.—The Treasurers of the Devonshire Hospital and Buxton Bath Charity have received £500 from the executors of the late Mrs. Margaret Platt, of Stalybridge.

CASES OF INFLUENZA WITH SEVERE ABDOMINAL PAIN AND COLLAPSE.

By ROBERT M. SIMON, M.D. CANTAB.,
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So much has been written about the present epidemic of influenza that it is possible that cases similar to those I wish very briefly to narrate have been overlooked by me, but as such have certainly not been generally recorded it would seem worth while to mention those I have had the opportunity of watching.

CASE I.—A medical man, who had been depressed by overwork and the almost sudden death of a friend from influenza, with cardiac failure, began on a Saturday in May to feel tired and ill. He was obliged to see some patients on Sunday morning, but was unable to enjoy a midday dinner, and spent the rest of the day on a sofa until he went to bed about 8 o'clock, feeling generally ill rather than complaining of any special pains or aches. His temperature at this time was 100°. He awoke at 6 A.M. with a severe pain in the abdomen, and hurried to the water-closet. There, after a copious motion, he so nearly fainted that he was obliged twice to lie down on the floor before he could complete his toilet and walk to his bedroom, where he lay for some time completely collapsed, sweating profusely, and almost pulseless. From this state of collapse he soon recovered, and was able to get up in the evening and out of the house next day, although for more than a fortnight he was exceedingly depressed in health and energy.

CASE II.—Another medical friend I have attended with almost similar history—a fainting fit in the water-closet preceded by abdominal pain and followed by very marked collapse. His illness was not, however, so transitory, for during several days he was kept in bed by fever—the temperature rising to 102.5°—and general catarrh of the lungs.

The other two cases, of which notes are appended, occurred in the hospital under my care, and were so alarming that the house-physician sent urgently for me to see them.

CASE III.—M. R., aged 42, was admitted on May 21st, 1891. She was married, and had five children. The day before admission she had a slight aching pain in the abdomen, for which she took two pills. On the morning of the day of admission, immediately after her bowels had been opened, she was seized suddenly with such severe abdominal pain that she fainted. The pain continued till the afternoon, when she was brought up to the hospital. There had then been no vomiting. On admission she was in a state of great collapse. Temperature, 96.4°. Face blanched; lips bluish-white; surface of body cold; pulse very small and feeble; breathing short and catchy. Complained of great pain in epigastric region, where there was muscular resistance and considerable tenderness. No distension of abdomen. Vomited once, soon after admission. Circulatory system normal. Some bronchitis, but no pleuritic friction. Hæze of albumen in urine. Menstruation had ceased for five years. She was put to bed with hot bottles, and given brandy. A poultice was applied to the abdomen. The temperature rose during next two days to 100°, and then varied for two days between 99° and 101°. She remained in the hospital for a week, suffering from slight bronchial catarrh, and then left, feeling very weak.

CASE IV.—E. K., aged 15, a bicycle worker, was admitted on May 5th, 1891. He had not felt in good health for the previous three weeks. The day before admission he came up to the hospital, complaining of abdominal pain, for which he was given some medicine. The pain troubled him no more that day. The following morning, whilst at work, he noticed gradual return of the pain, and soon afterwards suddenly fainted. He was given some brandy, and brought at once to the hospital. On admission he was scarcely conscious, and so collapsed as to appear almost moribund. The temperature was 98°; the surface of the body was cold; the face of bluish tinge (but without sweating); the pulse was scarcely perceptible, and the respirations sighing and very infrequent—from 6 to 8 per minute—with pauses of five seconds or more between the end of expiration and the beginning of inspiration. With some difficulty it was made out that he had pain in the right side of the abdomen, mainly in the region of the