revealed sufficient evidence to demonstrate the existence of a more grave condition. So long as the cyst was sufficiently small and adaptable for its presence to be compensated for by variations in the amount of cerebro-spinal fluid, the symptoms caused were bound to be indefinite; with its increase in size beyond such dimensions symptoms of intracranial pressure would commence, but would continue to be variable owing to the fluid nature of the tumour.

Disseminated sclerosis was considered as a possible diagnosis, and colour was lent to this view by the nystagmus, staccato speech, tremor, and disordered reflexes. All these symptoms, however, could be covered by a diagnosis of neurasthenia, the speech being tremulous rather than actually staccato, and the "tremor" being better described as "unsteadiness" of the hands. Moreover, while optic neuritis might possibly occur in disseminated sclerosis, the chances of its being bilateral in this disease are remote, and the localisation of symptoms to one side of the body, coupled with the intense and persistent headache which occurred in this case, seemed to point to an organic brain lesion, even though the absence of vomiting was rather against this view.

The rapidly progressive nature of the symptoms soon put the diagnosis of disseminated sclerosis out of court in favour of that of cerebral tumour, which was later established beyond all question by the onset of typical cerebral vomiting.

Reference.—Brain, vol. xxvi., 1903, p. 603, Dr. Caley, "Hydatids of Brain."

A STUDY OF
EPIDEMIC INFLUENZA IN AUSTRALIA.

FOUNDED ON TWO HUNDRED AND FOURTEEN CASES SEEN AT THEIR HOMES IN GENERAL PRIVATE PRACTICE.

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FROM my experience as a general practitioner who has kept sufficiently detailed records for general review purposes of 214 consecutive unsorted cases of influenza I have arrived at the following typical picture of a simple uncomplicated case of epidemic influenza.

Course and Symptoms.

On the first day patient "out of sorts"; on the second day he takes to bed. Symptoms include headache, more or less severe, pain in loins, back of the neck and of the legs, and often on movement of the eyes. Cough is either entirely absent or slight. There is usually giddiness, anorexia, and much general malaise. Stiffness, amounting at times to soreness of the throat on swallowing, is commonly present, though seldom complained of. Constipation is frequent. The temperature may rise on the third and fourth days to 104° F. in severe cases, though usually the highest temperature, about 102·5° F., is recorded on the second or even first day. The temperature falls by lysis and the symptoms gradually subside, the disease running its full course in four to six days. I propose to call this algesic type "Epidemic Influenza Vera" or "Influenza Vera Simplex," and have used these terms in the present discussion.

Of this simple uncomplicated algesic type I saw 19 cases in my first series and 103 cases in the second series. The common complications are definite lesions in organs and regions directly connected with the naso-pharynx, in the following order of frequency: (1) larynx and trachea; (2) large and small bronchi; (3) stomach; (4) lung alveoli; (5) peri-nasal air sinuses; and (6) the middle ear. We may thus conclude that the seat of invasion is the naso-pharynx.

The earliest and commonest symptom of an impending complication is a cough. Without presenting any tangible pulmonary symptoms the patient complains of a hacking cough without expectoration. The temperature commonly ranges higher than in the algesic type, the headache is aggravated by the cough, prostration is more marked, and convalescence more protracted. The most careful examination fails to detect any physical signs of disease in the lung, nor is the respiratory rate increased. I group these cases together for convenience as the "tussive" type. It is probable that the cough is due to irritation of the larynx or trachea. Further extension of the trouble gives rise to pneumonia, usually of the lobular type.

Coryza, formerly regarded as an integral process in the disease, has been remarkable for its absence from my series. I have seen only 11 cases. Moreover, it appears probable that a coryza may confer a degree of immunity. I have several times noticed that in families visited by influenza, one or two members with coryza escaped. Two of the cases of this that I noted in the first wave, however, came under my care during the second wave. In neither case were any other members of the family reinfected. Both sinus disease and otitis media may occur without previous naso-pharyngeal catarrh. I have seen one case of the former and two of the latter follow otherwise uncomplicated algesic cases. Epistaxis was common, particularly in the algesic type. It usually calls for no treatment and almost invariably gives prompt relief to headache if present.

Gastric influenza, familiar in literature and inter-epidemic times, proves to be of rare occurrence if guarded against by feeding often and in small amounts, and by the most meticulous care in the avoidance of fat and flavourings. I have seen only five cases of vomiting (omitting one case of pernicious toxæmic vomiting of pregnancy) in the last 161 cases, and in two of these I had reason to believe that mutton broth had been given by the cupful and without previous cooling to remove the fat. I am of the opinion that the vomiting arises primarily as a nausea accompanying the general malaise, and that it is started by pressing nourishment in the presence of this nausea, and the complete absence of appetite. These conditions, Pawlow has shown, entail long-delayed digestion, retained food and nausea together setting up a condition of gastric irritability. Thrombosis of the long saphenous vein occurred in two of my cases. In both the thrombosis appeared without previous warning, late in the case when the patient appeared to be making a good recovery. Acute dilatation of the heart occurred in three cases. Two were in pregnant women, both about mid-term; one died as a result; the third case was in a man, aged 65, and this also resulted in death. All three cases were, up to the appearance of the dilatation, mild cases, two were algesic in type, and the third (female who died) tussive.

Treatment.

1. *Vaccine therapy.*—The common occurrence of the disease in persons inoculated during the previous three to six weeks caused me to become

sceptical at the outset as to the value of vaccine therapy. Fourteen cases were treated by similar medication and diet, but alternately with the "Commonwealth" vaccine containing *M. catarrhalis* pneumococcus, streptococcus, and a "Gram-positive diplococcus (not the pneumococcus) isolated from all the cases examined." (The quotation is from the Commonwealth laboratories leaflet accompanying the vaccine.) This series is admittedly too short to be of much comparative value, but the inoculated cases compared so unfavourably with the others that I was discouraged from proceeding further with this comparative series and abandoned the vaccine. I can offer no opinion as to their value in pneumonic cases.

2. *Intoxication with soluble salicylates.*—I had previously observed that intoxication with soluble salicylates appeared to cut short attacks of influenza and dengue in addition to its well-known efficacy in polyarticular rheumatic fever. The treatment was at first adopted in a few cases only, and being in the presence of a new disease, or at least a new manifestation of an old disease, I naturally gave trial to the various remedies advocated by the Commonwealth and State health authorities, and the quarantine medical officers. Following these authorities quinine, calcium lactate, oleum eucalypti, hydrarg. perchlor., ferri. perchlor., and simple fever mixtures were tried. Salicylate intoxication appeared productive of the better results, therefore this treatment was early adopted for alternate cases. Of my first 87 cases 53 were treated by various methods, and 34 by salicylate intoxication. These latter showed an average duration of the illness definitely shorter than that of the former.

At this stage I adopted the following prescription as a routine mixture in every case seen before complication had set in:—

Quinæ salicylatis ... ... gr. v.
Sodæ salicylatis ... ... ,, x.
Sodæ bicarbonatis ... ... ,, xx.
Infusi gent. co. ... ... ad ℥ ss.—Misce.

I do not add mucilage as that tends to cause the disagreeable taste to hang in the mouth. When intoxication is reached, I order the dose at such intervals as will maintain a slight buzzing for 24 hours or until the temperature falls below 101·5° F. or the development of insistent cough, when the intervals are lengthened, or the dose decreased. The whole aim of this treatment is to cut short the progress of the disease before complications set in; that it apparently does so is borne out by my figures (see table below). When complications intervene it should be abandoned.

3. *Treatment by creosote and creosotal.*—Since pneumonic resolution is associated with increased expectoration, it was thought possible that the early indication of expectoration might have a favourable influence in this disease. In the endeavour to produce increased expectoration as the result of definite bronchial reaction creosote was selected because (1) it is a disinfectant; (2) it is known to be eliminated, in part at least, in the breath; (3) post mortem in cases of phenol poisoning there is commonly found, among other signs, intense injection of the bronchial membranes; (4) it is less liable to upset digestion than phenol itself.

Method of administration.—Whenever in a tussive case the cough became insistent and distressing or pyrexia was unusually prolonged creosote was administered in 5-minim doses, usually with sp. ammon. aromat. ♏ xxx., suspended in equal parts in mucil. acaciæ and syr. simp., four-hourly at first and later on hourly. In the majority of cases bronchial reaction is prompt, as evidenced by the rapid development of expectoration. Should the development be slow or a scanty tenacious sputum be already present, tincture of ipecacuanha ♏ iv. and squills ♏ x. to xv. is added to the mixture. It is not contended that this treatment is a cure for epidemic pneumonic influenza, but I submit that the analysis of my statistics (vide table) justifies my belief that it does serve to prevent the development of pneumonia in some cases. I have found that vomiting in the few cases where it has occurred is promptly controlled by a single dose of chloretone gr. v. and 24 hours' starvation. At times impossible to abolish, sleeplessness should be treated heroically if treatment be called for at all. When morphine is used, not less than gr. ¼ and repeated in half an hour if the first be not effective. I am of the opinion that if the drug fails to produce narcosis, it rapidly has the opposite effect; especially does this appear to be the case in the presence of sthenic delirium.

Comparative Table.

—	Epidemic influenza vera.		Epidemic influenza vera complicata.				
	No. of cases.	Algesic type.	Tussive type.	Pneumonic.	Coryza.	Septicæmia.	Fulminating.
First series	53	19	16	13 (3 dths)	2	2 (both died)	1 (died)
Second ,,	161	103	42	7 (1 dth)	9	0	0

An analysis of this table reveals: 1. That the proportion of serious and complicated cases was considerably smaller in the second epidemic than in the first. 2. Assuming that every tussive case is a potential pneumonia (and I regard the assumption as justifiable) then in the first series 29 cases yielded 13 pneumonias, whilst in the second 49 cases yielded only 7. 3. As a result the death-rate fell from 5 in 53 (the fulminating case is omitted) to 2 in 161. (One algesic case died from acute dilatation of the heart.)

General Discussion.

My description of influenza is at variance with that given in text-books and recent journals, in that I have not included coryza and cough as initial symptoms. (The single exception that I am acquainted with is Strümpel's description in his text-book (Vickery and Knapp, translators, 1911).) Such cases as I have here described as the algesic type are recognised by practically all writers, and are by them termed "mild" cases. Furthermore observers are agreed that the disease commences with the symptoms which I have described as proper to an uncomplicated case. My series of cases is thus in no way peculiar, but the prominence of the respiratory symptoms has unduly impressed most recorders, because their cases have included a larger proportion of serious cases.

It is in contributions from general practitioners and army medical officers, whose cases undergo no sifting process, that the most notice is taken of the milder cases. It seems reasonable to assume that the mild cases described by Burnford[1] include my algesic and tussive types.

[1] THE LANCET, 1919, i., 794.

Theories of Causation.

In view of the variety and inconstancy of the organisms found in pneumonic and other complicated forms of influenza, and their presence of similar varieties in pathogenic conditions not associated with influenza, it seems reasonable to conclude that in epidemic influenza the toxæmia so lowers tissue resistance that double infections become common and are the chief cause of the mortality.

A further fact which lends support to this conclusion is that the overwhelming majority of the complications involve definite gross infections of surface exposed to double infection. This of course is significant only when coupled with the fact that in the algesic type of case there is no apparent lesion or inflammatory process, whilst in all the other varieties inflammations play a leading part.

I have perhaps not made it sufficiently clear that an apparently mild algesic attack may have been gravely toxæmic as manifested by sequelæ of late and usually sudden development. Among my 122 cases which ran their course as apparently mild algesic cases there were 2 cases of acute dilatation of the heart with 1 death, 1 case of thrombosis of the long saphenous vein, 1 case of melancholic insanity still in an asylum, and 1 case of myalgia, right deltoid (still under treatment).

If, as here contended, epidemic influenza vera is a toxæmia without local lesion, it follows that the causative agent should be sought for in the uncomplicated cases. The resistance of the great majority of the public attacked by the disease is so lowered that they are liable suddenly to develop some other disease. The most abundant pathogenic organisms are those capable of causing pneumonia (apparently they are always present in the naso-pharynx of healthy individuals), and next in order of abundance are the pyogenic organisms and *Micrococcus catarrhalis*. Hence pneumonia is the outstanding complication of gravity, and amongst these septic or pyogenic pneumonias are common. Next in order of frequency are septic processes in and around the naso-pharynx. Gastro-intestinal disturbances are less frequent probably on account of the antiseptic properties of gastric juices.

The varied nature of the cases in any series, and at times even in the same family, seems to point to the mixed nature of the disease. All complicated cases of influenza pass through an algesic stage of about three to six days. One is at a loss to comprehend the subsidence of the aches and pains, whilst other symptoms take their place and come into prominence, if the newer symptoms are due to graver infection and intoxication by the same organism. The duration of the aches and pains is, on the average, the same as that in uncomplicated algesic cases, and it therefore appears more probable that the initial disease runs its course and the later symptoms are due to a transcurrent or superimposed malady. Salicylate intoxication appears to be of value if resorted to before the complications; it is useless after they have set in. If the same organism is at work this would be difficult to explain.

If the algesic and graver forms are manifestations of a common disease, then epidemic influenza is remarkable for the very high percentage of "abortive" cases. If endemic and pandemic influenza are caused by the same organism we must seek some explanation of the following differences.

Pandemic Influenza.	*Endemic Influenza.*
Highly contagious.	Not highly contagious.
Mortality high.	Mortality low.
Complications and sequelæ common and grave.	Complications and sequelæ rare and not grave.
Seldom begins as a nasal catarrh.	Nearly always begins as a nasal catarrh.

If, on the other hand, it be assumed that there are really two diseases, and that the pandemic disease confers immunity for a span of years, it should persist during that inter-epidemic span of years as a children's disease, attacking those born since the last epidemic. Though there is no evidence of this, it appears more reasonable to suppose that the two diseases are distinct. It must be remembered that the only method by which, as far as we know, a pathogenic organism can achieve periodical virulence is by conferring an immunity over a span of years on the populations attacked. If the organism remains in our midst causing endemic influenza, then at the expiration of the period of immunity it should flare up throughout the world, whereas we have conclusive evidence that the pandemic has been carried round the world.

It is therefore probable that pandemic and endemic influenza are distinct diseases, and that the organism responsible for epidemic influenza vera has not yet been isolated. It should be theoretically possible to discover an immunising vaccine or serum once the organism has been isolated.

It has been suggested that the periodicity of influenza pandemics is due to virulent new strains of the organism, and that the populations attacked rapidly develop a partial immunity to the new strain, so that it becomes responsible in inter-epidemic periods for the mild endemic disease of low mortality. This hypothesis is open to two grave objections. First, it involves the assumption of the possibility or even actuality of the prompt and complete inheritance of an acquired character—namely, immunity to the new strain. Secondly, it lacks the confirmation of any parallel periodical virulence in any other of the many known and unknown (e.g., measles) pathogenic organisms.

In conclusion I wish to point out that my contention as to the double nature of complicated epidemic influenza vera might perhaps be tested by comparing the resistance to pneumococcus and streptococcus in experimental animals inoculated with the saliva and nasal mucus of patients suffering from the uncomplicated algesic type of the disease with that of control animals.

Though I have consistently regarded the disease as a toxæmia, I do not overlook the possibility of the condition being a septicæmia caused by a filter passer or other undetected organism, and the double infections therefore due perhaps to symbiotic affinities as much as to lowered tissue resistance. This possibility has been deliberately kept out till now in order not to complicate the argument by alternative phrases.

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THE METROPOLITAN HOSPITAL SUNDAY FUND.—The annual meeting of this Fund was held at the London Mansion House on Dec. 18th, when the Lord Mayor presided. Mr. Robert Martin Holland-Martin, vice-president, in moving the adoption of the report, said that the total receipts for the year were £86,232, the second largest on record. In 1918 there was a total of over £92,000, but this sum included £5000 from the American Red Cross. The donations for the year amounted to £11,271 and the church collections, which showed a slight decrease, to £40,307. The collections, he said, had been a little difficult in view of the general uncertainty of the outlook and the future of hospitals. Hospital Sunday, 1920, was fixed for June 27th.