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INFLUENZA AND MELANCHOLY

BY KARL A. MENNINGER, M.D.

TOPEKA, KANSAS. LECTURER IN ABNORMAL PSYCHOLOGY, WASHBURN COLLEGE

For nearly four hundred years it has been recognized that depressions follow influenza. The current conception of the medical mind is well voiced by Osler (1), who wrote that "the most important of the nervous sequellae (of influenza) are depression of spirits, melancholia, and in some cases dementia." There is no doubt but that the internists and general practitioners, who, after all, see the great bulk of the influenza cases, see and even themselves experience this sequence of influenza—depression, frequently. "Since I had influenza" is the touchstone of many a clinical history of depression.

So general has been this phenomenon that Clouston (quoted by Pritchard) (2) considered that the "nervous tone" of the entire European continent was lowered by the epidemic of 1890-1892, and Mills (3) thought the same true of this country. I have suggested (4) that it is conceivable that this, through a general loss of mutual confidence, optimism, and faith, brought about the financial panic of 1893, and may be in part responsible for the general unrest of the present moment, generally ascribed to the late war alone.

Now it is all well enough for internists, general practitioners and historians to speak of "depression of spirits," "melancholia," "hypochondria," etc., as if they were synonymous, or at least allied terms. Psychiatry has long been handicapped by the confusion of symptoms and diseases. Our delimitation of entities followed so tardily the historic conceptions of many more strictly somatic diseases (for example, influenza itself) that there is still great difficulty

in getting any general agreement as to when *terms* should be used and when *names*. We think now in the psychiatric world we can be rather proud of an emergence, however gradual and incomplete, as we are reminded by Jelliffe and White (5), from a descriptive to an interpretative psychiatry, but this is not to say that our description is perfected. Symptoms and syndromes are no longer synonymous, but they are still very much confused.

"Depression of spirits," then, as well as the "melancholia" and the "dementia" are not sufficient for the psychiatrist. He conceives of depression as a *symptom* of many diseases. Neurosyphilis is frequently characterized by depression, both in the parietic and the tabetic forms. Epileptics sometimes commit suicide in fits of depression. Depression, as Shuster (59) has shown, is frequent as a leading symptom in brain tumor. It is familiar to us all in the apoplectic hemiplegiac, where it may be accompanied by irritability and "dementia." Depression is present in some types of schizophrenia; it is frequent in the paranoid psychoses; it is very frequent among psychopaths of the various sorts. And finally one recalls it as the most conspicuous symptom in some phases of the cyclothymic or "manic-depressive" psychosis and in many of the psychoneuroses.

One deduces, then, that depression is a very general index of acute mental pathology and is no more specific or diagnostic than an increase in body temperature or a decrease in red blood corpuscles. However obvious this may appear upon analysis, it is a point not generally grasped *a priori*. Ample proof is provided by a review of the psychiatric literature concerning influenza. Symptomatic "depression" and the Kraepelinian entity of depression are hopelessly confused. Melancholy and melancholia are not distinguished.

HISTORICAL AND BIBLIOGRAPHICAL

Hennisch I, according to Espagnol (6), spoke of extreme prostration, somnolent states, "lypothymias" and other disquieting incidents in the epidemic of 1580. "Patients tormented with sad ideas" are referred to by Petrequin (7) in 1837 and he also referred to "four or five suicides in the hospital of Paris" during that epidemic.

Jaccoud (8) and others, writing in 1872, list nine groups of nervous symptoms subsequent to influenza, of which the first is "profound lassitude, prostration, etc.," and the seventh a "state of anxiety difficult to describe." The epidemic of 1890 called forth much comment from psychiatrists and upon these observations there arose the current conceptions of a depression as the usual postinfluenzal psychopathy.

Kraepelin (9) wrote early in the epidemic describing eleven cases, of which there were "simple psychic depression," one was "depression in a psychopath" and one a "mania," a boy who, after influenza, was first depressed and irritable, and whose symptoms as described in the remainder of the article were indisputably schizophrenic.

Classification made by writers subsequent to the epidemic of 1890 throw a helpful light on the matter. Kirn's (10) grouping was: acute exhaustion states, melancholia, manias. Ladame's (11) grouping was: (1) melancholia and hypochondriasis, (2) asthenic psychoses, (3) other mental forms. Bidon's (12) grouping was: (1) psychical depression, (2) maniacal excitement, (3) idiopathic psychoses brought out (eclatant) by the occasion of influenza.

Espagnol (6) concluded that "melancholia is of all postinfluenzal psychic manifestations the most frequent." He points out that of one hundred cases reported by Jutrosinski (13) 38 were melancholia, 13 were mania; Knapp (14) 93 melancholia and 60 mania. Espagnol goes on to say "one often sees after influenza states of mild depression and all the intermediaries between simple neurasthenia and melancholia." This is concurred in by Solbrig (57) and Laehr (58) and Kraepelin (9). "Most frequently one sees simple melancholia with insight." Espagnol further states that the mild melancholic forms are the most frequent, that they get well in from six to eight weeks, but may be prolonged in the grave forms for months or even indefinitely. It may remain stationary and may assume a hypochondriacal character with delirium. The dominant idea of the disease is that the patient is unable to get well or that he is going to die all the time. Others imagine themselves menaced by a trouble which will ruin their fortune and their honor. There are those who are the picture of despair and disgust with life with ideas of attempts at suicide.

He refers to four cases of Van Deventer (15), three of whom attempted suicide and the fourth had "a horrible fear of death." He quotes Krause (16) as having commented in one case "ideas of persecution, ideas of suicide, and in one case dread of food." He quotes suicidal cases of Ladame (11) and Snell (17) and of Martin (18).

Mispelbaum (20) described "grave forms of melancholia with phenomena of mental inhibition, catalepsy, stupor, anxiety and horrible hallucinations, sad delirious ideas, refusal of food and fatigue of life."

Jastrowitz (21) states that the most frequent form of psychosis

following influenza was melancholia. Althaus (22) thought it to be acute hypochondriacal melancholia with lethargy. Aust (23) thought acute confusion with hypochondriacal and agitated melancholia. Reill favored mania and the excited states.

Suicidal cases are further listed by Bossers (25), who mentions cases by Smith (24) in America, Webber (26) in England and Weynerowski (27) and Van Deventer (15) in Germany. He also lists presumably as forms of depression the obstinate refusal of food, complete insomnia and delusions of being followed, which occurred in the cases of Borchardt (28), Kirn (10), Leledy (30), Krause (16) and Becker (32).

Landouzy (33), in 1837, is quoted by Bossers (25) as one of the earliest mentions of depression. He wrote: "The prostration of strength was instant and universal and attended with extreme depression of spirits. It is a reaction of the whole organism to the lesion of the central nervous system. The prostration of strength was at times so severe that many patients could not walk and indeed even the arms were for a while as good as paralyzed."

Some of Espagnol's cases given to illustrate depression are also illuminating as to what was regarded as a depression.

"A merchant of 60 with negative family history after a second attack of influenza became irritable, impatient and choleric. He refused all solid food because digestion became difficult, the stomach became dilated, and he had eructations and constipation. Under the influence of treatment by Vichy water, sodium arsenate, quinine, and kola, he improved slightly, but his strength was diminished and he was obliged to give up work and take a vacation. . . . The neurasthenic (sic!) state persisted. He complained of throbbing of the abdominal aorta. A year later he was seen in consultation by various other doctors and under various forms of medication improved slightly. In general, however, he remained as described.

"A woman of 48 with negative family history and past personal history after an attack of influenza lasting 20 days began to have a dread of food and suffered from anorexia, constipation, and amenorrhea. She developed a state of anxiety, sat immobile with fixed stare, and displayed such erratic conduct disorder as one day rushing off to the city, wandering about alone and purposeless for four or five hours. . . ."¹

¹ (Free translations by the writer.) It must be obvious from these brief and fragmentary illustrations that the confusion of symptom and syndrome, melancholy and melancholia, has led to much idle polemic. The relation of such instances as the above, with their suggestions of psychoneurosis and of schizophrenia, to post-influenzal melancholia vera is interesting, but is certainly not identity. Espagnol writes of "Post-influenzal neurasthenia," but cites "melancholia" as a type.

Richard Jutrosinski (13) concludes that mental diseases are released by influenza chiefly in those nervous dispositions preeminently in the convalescent period, without favoring either sex, occurring from 20 to 50 years of age, and while all different forms of psychoses occur the majority are of a melancholy hypochondriacal character. Of 104 cases 28 were acute delirium, 15 were delirium tremens, 15 were mania, 38 were melancholia.

Savage (37), in England, analyzed 54 cases from the 1890 epidemic of which 20 were melancholia and 13 acute mania "of the ordinary type."

Kalischer (34) thought that when manic-depressive psychosis followed influenza it should be regarded merely as common "pseudo-influenza psychosis."

Such were the reactions of the European psychiatrists to the data of the 1890 epidemic. The American opinion was similar.

Church (35), in 1891, pointed out that "influenza might not only give rise to mental troubles, but that, in the predisposed, grippe is competent to cause marked excitement or great depression of motor, sensory and mental nervous apparatus."

Chas. K. Mills (3) writes of "nervous and mental prostration, which occurred during and after the acute illness." "The mental depression often present as an initial symptom has been, in some cases, simply overpowering." He decides that the most frequent type of postinfluenzal mental trouble is "a form of melancholia" or "lypemia." This was so frequent, he thought, that "the influenza epidemic has impaired the morale of the community. Lack of spirit in work and an apprehensiveness in reference to health, business, and all matters of personal interest have been abnormally prevalent. Hypochondria has displaced hopefulness in the individual commonly possessed of courage and fortitude." Mills' description of postinfluenzal depression is worthy of quotation verbatim.

"The commonest type of grippe mental disorder, as I have just stated, is a form of melancholia or lypemia; but as this not infrequently assumes the form of melancholia agitata, it is often regarded as mania by practitioners not accustomed to differentiate the varieties of insanity. These patients are intensely depressed and emotional; they are filled with apprehensions of disgrace and ruin; they believe that they will never recover their former health; they are suspicious and delusional with reference to those who surround them; they are frequently unwilling to eat, or to rest, or take medicine; and in some cases they have definite delusions of terrible char-

acter, for the most part hypochondriacal or religious. They are frequently plagued with the thought of suicide, and sometimes make successful or unsuccessful suicidal attempts. They have been deprived by the ravages of the disease of mental and moral stamina. In the majority of these cases, but not in all, some hereditary or acquired predisposition is present."

These are representative quotations from the writers of the previous epidemic. As a matter of fact the descriptions are far more valuable than the nosological statistics for the reason that the diagnosis of mania and melancholia at that time would by no means coincide with our present conceptions.

RECENT EPIDEMICS

What of the recent epidemic? In a statistical analysis of 80 cases, which was the first study of psychoses associated with influenza of the recent epidemic, I pointed out that as a *symptom* depression was distinctly uncommon. Thus, whereas delusions and hallucinations were present in three fourths or more of the cases, depression was a clear symptom in only about one fourth of all the cases and in these it was rarely constant when present. It seems to have been relatively more frequent in the feeble-minded who showed postinfluenzal mental symptoms (29).

Exception was taken to these figures by Fell (38), who, at the Walter Reid General Hospital, found that "in twenty cases depression was the by far most common symptom" and points to the work of Jelliffe (39) in confirmation. What Jelliffe says is that "it has seemed, not only in my experience but apparently from the many reports of others, quoted in part in the bibliography . . . that depressed states may be termed the most frequent of grippe psychic conditions." As a matter of fact this, then, is simply to say what we have just said above, that in the epidemics of the past years depression has been a symptom very frequently observed. The present question is whether it was a frequent symptom in this most recent epidemic. In 20 cases Fell's experience showed that it was.² In 175 cases our experience showed that it was not.

Aside from this, Fell's findings and ours coincided precisely, namely, that the characteristic picture was "hallucinatory confusion with schizophrenic symptoms." [Delirium schizophrenoides.]

Most other writers from the recent epidemic report in agreement with me. Harris (40) discusses the effects of influenza on the nerv-

² Of his 20 cases 8 were put in the manic-depressive group. Of our 175 cases only 10 were clearly cases of this group.

ous system, mentioning all sorts of neuropsychiatric complications and sequellae. In a review in the Boston Medical and Surgical Journal John B. Hawes, the phthisiologist, writes: "It is curious that, in this article, the author does not mention the intense mental depression, even with suicidal tendencies, which has been so marked in the epidemic in this country." A. E. Harris (41) analyses 18 cases of postinfluenzal psychoses as to symptoms and found depression the preeminent symptom in only three cases, whereas delusions and hallucinations were present in ten and excitement and mania in fourteen. Barnes (59) speaks of "neurasthenic reactions with an exaggerated depressive coloring" and recalls the conventional view that depressive psychosis has been the most frequently observed, but does not state his own experience.

Moreira (42) makes no mention of depression in his summary of his experiences in Rio de Janeiro. De Campos (43) mentions depression in a list of the symptoms, but does not refer to it in his summary.

Harris and Corcoran (44) analyzed fifty postinfluenzal psychoses at the Brooklyn State Hospital and found sixteen, or 32 per cent., to belong in the manic-depressive group. Closer scrutiny of details, however, reveals the fact that only three of these were melancholias and that the authors have considerable misgiving as to the correct placing in that group.

Waterman and Folsom (45) analyzed 51 cases at the Manhattan State Hospital, 12 of which were diagnosticated manic-depressive, 6 of which were depressed.

Valdizan (46) does not discuss depression as a symptom or disease in his studies in Peru.

Schlesinger (47) in Switzerland discusses the varieties of influenzal delirium and does not mention depression. Demole and Alikhan (48) did not find depression to be a frequent symptom of the mental disturbances caused by grippe in the insane. In another article, however, Demole (49) divides his groups into the melancholic and the aesthenic psychoses.

Ladame (50) includes a tendency toward depression, "idees noires," etc., during delirium and towards suicide, but of the psychoses themselves he does not discuss the depressed type. On the other hand he points out that the question is complicated by "psychic depression" dependent upon the demoralizing circumstances of the war and the general malnutrition of the people.

Ordway (51) analyzed 31 cases at the Boston City Hospital, out patient department. "Mild depression and restlessness" is mentioned in one case.

G. Roussy (52) discusses the neuropsychiatric sequellae of influenza in France and points out the relative infrequency of mania and does not mention depression.

Courbon (53) does not mention depression in discussing the nervous and mental complications of grippe.

Conner (54) observed, in a delivery of reports to the Surgeon General of 72 army hospitals in this country that many other nervous symptoms, "great apathy, mental dullness and somnolence marked the early stage of the attack in most cases, and with these symptoms there were usually also great depression of spirits and loss of 'nerve.'" In a few of the reports, insomnia is described as of frequent occurrence.

Gordon (55) does not mention depression. Reilly (56), also speaking of nine psychotic cases, points out that "melancholia and sleeplessness were prominent" and the latter is emphasized.

Rossi (60) encountered nine cases in which a manic-depressive psychosis developed during the weakness following influenza. He ascribed it to the suprarenal insufficiency which was manifest. This assumption was confirmed by evidences of suprarenal insufficiency in six other patients with manic-depressive psychoses who had not had influenza. It was placed on a still more solid basis by the efficacy of suprarenal treatment (quoted from abstract in J. A. M. A., confirmed by personal communication).

In connection with the matter of cure, the case of Gauster (61) of "the cure of a severe melancholia by severe influenza" should be recalled. It is referred to by Stransky (62) who strangely has nothing to say for his own part relative to influenza and depressive psychoses.

SUMMARY OF LITERATURE

A summary of the literature would seem to indicate three facts:

1. Many people, after influenza, experience an emotional depression with more or less general psychic depression for a greater or shorter period of time, but which is usually *not* severe enough to be regarded as a psychosis or even as a neurosis. It was ascribed thirty years ago by Church to cardiac incompetency, and since then by divers writers to various physical inadequacies, the most recent of which has been hypoadrenalism. It is generally agreed that it consists in feelings of lassitude, weakness, fatigability, incompetence, irritability and melancholy.

2. After the influenza epidemic of 1890-92 there were many cases of psychoses in which depression was a preeminent symptom,

and although it is scarcely likely that all of the cases which were given the name melancholia wholly deserved it, it is possible that there were relatively more cases of "manic-depressive psychosis" than have been observed following the recent epidemic.

3. Depression has not been a frequent symptom in the psychoses subsequent to the recent influenza epidemic, nor has the manic-depressive psychosis been even a relatively frequent form of disease entity. The great mass of literature agrees on this point.

PRESENTATION OF CASES

Depression, we are now fairly well agreed, is a symptom and not a syndrome, at least not a disease entity. It may occur under much the same garb in neurosyphilis, hypophrenia, brain tumor, psychoneurosis, etc. As psychiatrists we are apt to think of it as characteristic of the cyclothymic group, the atrociously christened "manic-depressive" psychosis. For reasons of pragmatic advantage, then, and waiving all philosophical considerations of monism, dualism and the concept of entity, we may say that all depressions severe enough to be considered definite indices of mental disease, may be classed as:

1. Belonging to the syndrome of melancholia ("manic-depressive" or "cyclothymic" psychosis).
2. Belonging to some other syndrome of which it is merely a conspicuous, but not a characteristic symptom: e.g., paresis, brain tumor, psychic trauma, etc.

In short, all psychotic depressions are clinically either cyclothymic or symptomatic.³

Before presenting our cases, we should perhaps settle once and for all the matter of the non-psychotic depressions, if I be permitted this paradoxical and possibly wholly unwarranted phrase. I refer to the mild dysthymic manifestations persisting for a few weeks or months after influenza in some cases, and however frequent or however discomfiting, probably evoking more lament from the patients and less consideration from the profession than they deserve. I say this for the reason that they are scarcely ever severe enough to be regarded as psychoses, and hence are rarely seen by psychiatrists. Bonhoeffer (63) has wept in print over this, and as a fact they come all too infrequently to the undivided attention of the general practitioner. Casual and incidental references to such a

³ I avoid the adjective "reactive" since it is more properly used as Meyer proposes, to connote the interrelations of etiology and diagnosis. I am trying to narrow this discussion down to matters of nosology purely, and that in a very broad sense.

condition are heard commonly enough, but I have taken pains to examine the records of representative men in general practice and internal medicine and I have questioned numerous such, and aside from a few cases that would very likely fall into groups of psychoneurotic or cyclothymic depressions, few cases come to them for postinfluenzal depression. Those cases where it is mentioned have been observed in a course of a consultation for some other complaint. Thus it is not infrequent for a patient with a postinfluenzal otitis media to complain also of depression.

Consequently, postinfluenzal depressions of the mild grade are not well enough known to anyone for us to be very dogmatic. Some interesting points are worth mentioning. They seem to recover spontaneously in a few months and they do not recur. They are not always of the depressed type. I have previously mentioned an incident reported to me of a typical though mild hypomanic state subsequent to influenza in a Jewish student never regarded as other than quite well mentally.

Returning now to the two groups of cyclothymic depressions and symptomatic depressions, I present, classified according to these groups, cases from our Boston series (19).

CASE I. Illustrating the precipitation of a cyclothymic depression by influenza in a man of 24 without known predisposition or previous attacks. (This case is abstracted from a full account given in a previous communication.) (36).

Family History.—Negative.

Past History.—Negative.

Present Illness.—Ten weeks prior to admission he was very severely ill with influenza. He returned to work for two weeks, although still pale and weak, and then had a "relapse" and was again in bed with chills, sweats and fever. After this he was incapacitated, "thought he was dying," was easily frightened, probably hallucinated and certainly deluded. He wore constantly a pained, doleful, anxious expression. He had an imperfectly formulated delusion that he had recently contracted venereal disease. His thought processes showed a conspicuous retardation. He sat about the wards all day, with head hung, and without interest in anything. When obliged to move he did so with slow, irresolute movements, and with an air of lugubrious torpor. He was "blue," "lonely," "worried," "down-hearted."

Physical Examination.—Negative except for exaggerated reflexes and a tremor of the hands.

Laboratory Findings.—Negative.

Results.—His condition remained unchanged. He was removed against advice on the ninth day.

Diagnosis.—Depressed phase of cyclothymic psychosis (manic-depressive, depressed).

CASE 2. *Illustrating cyclothymic depression precipitated by influenza in a patient perhaps predisposed by temperament but without history previous attacks.*

Margaret, case 160, was a woman of 36. She was described as having "always kept to herself," and having periods of "feeling sad and blue." She had two children, 3 years and 15 months respectively, and was about 3 months pregnant again. Otherwise her medical history was unimportant.

In October she had influenza. After she had recovered, the family moved from Medford to Boston, but her husband did the packing to save her the exertion. She had felt increasingly depressed. She worried much because she seemed incapable of caring for her children. She had wanted to die, and even thought she might kill the children and herself in her despondency. She was finally brought to the hospital the last of April.

A *mental examination* confirmed the picture of depression, retardation, some anxiety; with a psychological rating of 11.5, hindered by her aprosexia. Orientation, memory, accessibility and conduct were normal.

Laboratory and physical findings were negative except for a few minor points which are interesting from the endocrinologic standpoint, namely, cyanosed hands, headache, "barely palpable" thyroid gland, blood pressure of 105/65.

Diagnosis.—"Manic-depressive psychosis, depressed phase."

CASE 3. *Illustrating a case of cyclothymic depression precipitated by influenza in a patient predisposed by temperament and with history of previous attack.* (Serial No. 133.)

This was a man of 29 born in Cambridge whose family and past history contained nothing relevant except for a period of depression lasting four months seven years previously.

In January, 1919, he had influenza and during the convalescence began to be depressed. He complained that his friends did not visit him and then decided he had no friends and became very sad indeed.

Although his physical condition improved his depression grew worse. He became retarded and then even paranoid. For two weeks prior to admission, March 31, he thought people on the street watched and followed him. *Mental examination* showed depression, retardation, paucity of ideas and a few scattered delusions of persecution. Otherwise it was negative. His psychometric rating was 18 plus. *Physical examination* was negative except for a slow pulse, 52.

He was discharged without improvement and against advice after eight days with a diagnosis of manic-depressive, depressed.

CASE 4. *Illustrating a profound depression in a patient whose previous history was not fully learned.* (Serial No. 49.)

This was a German woman of 57 who had a serious attack of influenza followed by pneumonia. A week after recovery from the latter she became noisy, unmanageable and suicidal. For this reason

she was brought to the hospital, where she showed none of these symptoms, but was profoundly depressed. She was hypokinetic, much retarded, and to most questions put to her she replied only with a low moan. She gradually improved and became more accessible and much less obviously depressed.

Physical Examination was negative. On the sixteenth day she was discharged.

It is interesting to note that a diagnosis of toxic psychosis (post-febrile delirium) was favored by two of the staff, presumably because of the rapid improvement. The question was raised as to the influence of the senium. Manic depressive, depressed, was the diagnosis favored by the majority of the staff (5).

CASE 5. *Illustrating the precipitation by influenza of cyclothymic psychosis of mixed type in a man without previous attacks.* (Serial No. 152.)

This man was an Armenian of negative family history and whose past history was said to be negative. In point of personality he was described as being "timid, easily excited, sociable, energetic and ambitious."

Ten weeks prior to admission he had a light attack of influenza. He developed the fear that he might have pneumonia and after his recovery continued in this fear. He became very worried and depressed and was very much afraid of dying. On January 12 he said his face looked like a dead face and a few days later expressed a disinclination to be with people. A week later he became self-accusatory with ideas of reference. It was nearly two weeks later that he was admitted and at this time he was quite disturbed, having spent the previous two weeks in a private sanitarium where he was said to have been uneasy, excited, profane and even violent.

At our hospital he was quite restless, showed a variable emotional tone, but was usually depressed, prayed much, seemed at times erotic, was frequently self-accusatory and had a few grandiose delusions. No memory defect was noted and there were no hallucinations. A diagnosis of mixed manic depressive was made.

CASE 6. *Similar to the above except that the psychosis was precipitated in a man who had previously had numerous attacks of a similar nature.* (Serial No. 50.)

This was a Russian Jew of 40 who three times previously in the past five years had been admitted to this hospital in a very similar condition. Each time he had cleared up and gone home to conduct very successfully a small retail store.

He had a brief, mild attack of influenza and during the convalescence became excited and then depressed, and entered the hospital in a typical mixed manic depressive condition. It was very difficult to tell whether he was very depressed or was about to become very excited. He would burst into a series of explosive sounds which some maintained were sobs and others that they were guffaws. After he recovered we asked him whether he had been laughing or crying and he laughingly said he did not know himself, but insisted that he had felt badly all the time.

He remained rather inactive, usually mute, said "I will be better in a few days and then I will talk," and made the most of his prolonged baths. On the third day he seemed well, and after a week or so was discharged as recovered.

It is interesting to note that three months later he returned in a similar attack and was again discharged well after a very brief stay.

CASE 7. A case of encephalopathic depression precipitated by influenza. (This case is abstracted from a previous account where the case is reported in full.) (65). (Serial No. 168.)

Family History.—Negative.

Past History.—Woman, age 51, born in Italy, married at the age of 27, and had nine children living and well, one dead of acute indigestion and no miscarriages.

Present Illness.—Until September 10 the patient was considered well in every respect. On that date she went to bed with an acute attack of influenza. She then tried to get up after a few days but had "a spell" of an hour's duration, during which she was tremulous, "nervous," suffered from palpitation, and had a fear of death. This fear persisted and prevented sleep. She made many pretended attempts at suicide and finally one confessed bona fide attempt. About ten weeks after the onset of the influenza she was brought to this hospital.

On the day of admission, when she tried to cut her wrist vessels, "she was excited for the first time, and pushed her husband away and did not want to see any one." The admission notes at this hospital, condensed, read as follows:

"Patient is an agitated and apprehensive Italian woman who answers questions promptly and accurately. Since influenza in September . . . she has been depressed, afraid she would die, worried over her physical condition. 'I feel sick all time. I think I die. If I shut my eyes I see bad people with big eyes. If I go to sleep I wake up and worry and think never get well. It all is come for my stomach. If I eat I feel bad; if I don't eat my stomach empty, I feel better. My nerves are all excited and my nights are terrible.' She complains of palpitation, constipation and insomnia in addition."

Physical Examination.—Entirely negative, except that the knee jerks were not obtained.

Laboratory Findings.—Negative.

Course.—On the fifth day after admission the staff made the following vote on the diagnosis: Psychoneurosis, 2; manic-depressive, depressed phase, 1; undiagnosed psychosis, 4. On the 19th, six days after admission, she was found to have a pulse of 140, a temperature of 104, and was apparently unconscious. In this condition she remained for over two days and died.

A necropsy was performed by the assistant pathologist to the Massachusetts Commission on Mental Disease, Dr. Myrtelle M. Canavan, and the brain in toto and in section was examined by the pathologist, Dr. E. E. Southard. The chief findings were: An extensive cerebral hemorrhage of large size with evidence of many petechial hemorrhages through the cortex, and bloody fluid in the

third ventricle. There were numerous "flea-bite-like dots" of blood between which the tissue was softened and of a gray to grayish-red color, as described by Leichtenstern. In addition, there was chronic fibrous endocarditis of left auricle and of mitral and aortic valves, old pleuritis, purulent bronchitis, gall stones in duct, slight vascular nephritis, aortic sclerosis, petechial gastric hemorrhages, hemorrhagic uterine lining, acute leptomeningitis.

CASE 8. *Another encephalopathic case of cyclothymia, in this instance exhibiting the manic phase.*

Family History.—American stock throughout. The father died at Westboro State Hospital when 84. He had a cerebral hemorrhage, no paralysis, lost his memory, thought people were coming into his room; said he saw apples being thrown up to him. Died in four months after admission. Occupation, traveling salesman. No alcohol. Seclusive, sensitive, suspicious, quick tempered.

Mother died of Bright's disease. Lively, sociable disposition. One sister living and well, aged 53.

Personal History.—Patient was born in Portland, Maine, age 49. Has always been "nervous."

Educational.—Her schooling was very irregular as she was "nervous." She would start to say a lesson, become shy and forget it. Was very sensitive to reproof. She left school when seventeen, at the end of the eighth grade. Part of the time she was in a private school, as she did not get on with one of her teachers, then returned to public school when the teacher left. The advanced age of graduation is accounted for by the absence from school.

Economic.—She learned the millinery trade, after that she was a children's nurse. Since her separation from her husband she had done nursing on confinement cases, working steadily and earning about \$15 a week. For the past six weeks she worked at putting up tea and coffee, wages \$9 per week.

Marital.—She was married when 21. Her husband left her 17 years ago. He was a moderate drinker, not a steady worker, and was away a good deal.

Children.—F., 27, an engraver, living and well, steady, non-alcoholic. D. (informant), 25, living and well. H., 23, in the U. S. army. R., 21, shipper in a drug store, living and well. No mis-carriages.

Personality.—Patient is quiet, talks very little, has friends, likes to read, and goes occasionally to the theater. Is good natured and easy to get on with. Good habits, normal religious interest.

Medical.—In 1902 patient had a "mental attack" and was in Westboro State Hospital for 13 months. This attack came on suddenly and she became happy and excited; sang, tapping her foot to keep time. Heard bells ringing. No visual hallucinations. No ideas of reference, persecution or suicide. While in the hospital she was in straight jacket for three months. Before going to hospital she did not know her sister. After leaving she knew she had been "ill with her nerves," but was then as well as ever and unchanged. While in school she was subject to fainting spells, was

unconscious but had no convulsive movements. Ever since then she faints if frightened or in a crowd. She had menopause a little over a year ago with no trouble.

Present Condition.—Patient had influenza September 6, and was in bed a week. She remained in the house several days, then went out and was apparently well. Her mental symptoms began October 4. She was living with her sister and began to make fun and laugh at her in an unnatural way. She began to swear (not her habit) at every one. She rhymed, making no sense, sang, and seemed very happy. She slept when given powder. Ate unnaturally well. She talked continually of her son who was in the army, said he had been mangled to death; said he was in the Tuscania and had been drowned. At another time she made a noise like a boat whistle and thought it was his ship coming in. Noticed her surroundings. Memory good. Never said things that could not be understood. No ideas of suicide, poisoning or persecution. She said she had "starved nerves." Kept talking of going to work soon. She spent her time rocking in a chair, talking continuously even when alone, and would answer herself rationally, common conversation as if she had a caller. She did not work, but cared for herself. No history of shock, no hallucinations. When advised to come to this hospital by Dr. C. she remonstrated and refused to dress, but was persuaded by a neighbor to do so.

Physical Examination.—Entirely negative, including the neurological tests, except that the knee jerks were obtained with difficulty. The heart was 5 cm. by 6 cm., the apex being in the fifth space within the nipple line. The blood pressure was 140-75.

Laboratory Examination.—Urine, blood and spinal fluid were entirely negative except that there was a positive complement fixation test for tuberculosis.

Mental Examination.—Ward Admission Note—November 1: "Patient is euphoric, distractable, mildly hyperkinetic, has marked flight of ideas, is approximately oriented. This is October, 1918, near the 12th of the month. After attempting to give a name to the hospital she said, 'It is a place for me to get well.' Patient greeted examiner with, 'How do you do, I wish I could play the brass band for the cooties. Say, where am I anyway? What day is this? Oh! excuse me, I've forgot. I'm not a spiritualist, but I am the lightning bug of the XYZ. I'm a great thinker—no, I'm a peacherina—a pear and a peach together—hinkle, tinkle, winkle, red, white and blue," etc.

"Psychomotor activity increased during the day. Reported to have slept eight hours last night. Tearful when talking to examiner. Says she is nervous, but not insane, therefore, wishes her sister to come and take her out of this noisy place. Headache reaction to lumbar puncture, but will not remain in bed for long at a time."

November 2, 1918: Patient was lying quietly on the bed when approached by the examiner. As soon as an effort was made to engage her in conversation she began a rapid flow of words and phrases, showing a characteristic pressure of mental activity. Orien-

tation approximately correct. She says that this is the homeopathic hospital.

November 3, 1918: Restless, somewhat noisy at times, talking and singing, attention easily gained but difficult to hold.

November 4, 1918: 9 P.M.—Patient was seen in convulsions at 8:50 by night supervisor. She is now unconscious. Corneal reflexes absent. Respiration rapid. Has passed urine. 9:05 P.M.—Has regained consciousness, though is confused. Mutters "Brittania" and many indistinguishable words. 9:15 P.M.—Again unconscious, respiration strenuous, corneal and plantar reflexes absent, no convulsive movements.

November 5, 1918: Seizure at 10:30 A.M., unconscious 5 minutes. Relatives now state that she has had "fainting spells" age of 15. Not as often as once a month. She loses consciousness, according to their history, but does not have convulsions though she often "looks as though she were going to." Does not bite tongue or pass urine involuntarily.

November 6, 1918: Pulse not good quality.

November 8, 1918: Patient died today, 10:45 P.M.

Diagnosis.—Manic depressed insanity—manic, with organic brain disease.

An autopsy was performed by the assistant pathologist of the Massachusetts Commission on Mental Disease, Dr. Myrtelle M. Canavan, and Doctors Noda and Uyematsu. The brain was examined by the pathologist, Dr. E. E. Southard. A large cerebral hemorrhage was found.

Autopsy Report.—Cause of Death: Cerebral hemorrhage. Acute Lesions: Cerebral hemorrhage, choked disc, focal congestion of lungs. Chronic Lesions: Coronary sclerosis, arteriosclerosis, cyst of liver, atrophy of ovaries.

Details of Brain Examination.—No hemorrhages under periotum. Dura not adherent. Base of Brain: First nerves short, bulbs plump. Second nerves: ? Flattening of right optic, left negative. Left third nerve caught in thickened pia mater and bound to lobus pyramidalis. Left fourth bound. Other cranial nerves not remarkable on gross inspection with the possible exception of right seventh which seems softened.

Marked pressure ring of cerebellum impinging upon the medulla, perhaps this pressure ring at a fixed point indicates there is a marked depression on the under surface of the medulla, perhaps due to the fixation of it and pressure of cerebellum against it; also lipping of both lobus pyramidalis.

The left cornu ammonis is softer than right; neither of them firm. Brain has a rounded appearance, particularly marked in left side. Hemispheres appear unequal, left temporal tip shorter with suggestion of notching. Right occipital tip rounded and plump.

Vertebral vessels equal, unite far up on pons. Basilar vessel somewhat thickened, also middle cerebral but not beaded.

Superior Surface: Left hemisphere everts and rolls to left side, exposing a markedly distended frontal pole. There is a hemorrhagic area involving the cortex measuring 6 x 5 cm., the marginal

gyrus and the first and portions of the second frontal, also there is an area following the second on the superior cerebral veins for an extent of 4 cm. in length x 1.2 cm. in width in the post central gyrus. This subpial hemorrhage with cortical destruction follows this vein to the temporal lobe. Subpial hemorrhage is seen and suprapial hemorrhage seen extending over the remainder of the brain.

The left hemisphere is thinner but shows some pressure effects, i.e., flattening of gyri with some subpial and extra pial hemorrhage.

The corpus callosum appears firm. The cingula of left nodule prominent. Whole left hemisphere softer than right.

Brain weight, 1190 grams, Tigge's formula $8 \times 148:1184$. Gain 6 grams.

Left optic nerve shows some edema of disc and the right optic nerve shows more.

Attempt at withdrawing fluid from third ventricle yield whole blood.

CASE 9. *Illustrating another cyclothymic psychosis, manic phase, this time without evidence of encephalopathy and without history of a previous attack* (this case again is abstracted from a previous article where it was given in full) (36).

The patient was a boy of seventeen with an entirely negative family history. Aside from stammering, with which he was troubled from seven until thirteen his past history was entirely negative.

Present Illness.—He was working very hard all fall while in attendance at a boys' academy, but had kept in excellent health until October 1. At that date he contracted influenza and was very ill for three days. He was able to be out by the sixth day, but a cough and much restlessness continued. He played tennis, went automobiling and took a short vacation, but continued to show a distinct hyperlogia, making extensive plans for the immediate and distant future. On the twelfth day this became very noticeable. He "talked rapidly from one subject to another," spoke of being nervous and wondered if he wouldn't go crazy.

October 13, 1918: *Mental Examination.*—"I am absolutely perfect. Have a cigaret? Here are two strings which they gave me for a test. Hello there, Major. We are all going to be in uniform before night. How old are you? I am 17 years and 9 months today and in 3 months I will receive a commission. . . . Girls? Yes, girls by the thousand. Girls from Wellesley, girls from Dartmouth . . . no, there are no girls from Dartmouth . . . girls from Smith, girls, girls. We'll put this thing across, and have all those beds put in. Can you see it? Will you help it? Never mind, not necessary." (Whistles.)

The patient showed hyperlogia and hyperactivity, elation, playfulness, flight of ideas, distractibility, etc.

Diagnosis.—Cyclothymic psychosis, manic phase. Committed.

CASE 10. *Illustrating again the precipitation of manic phase cyclothymic psychosis, this time in a patient with a history of a previous attack of depression.* (Abstracted from the same source as above.)

This was a Jew of 25, happy and sunny in disposition who had had a distinct phase of depression lasting two months. While at Camp Devens, a private in the infantry, he contracted influenza and during convalescence manifested increased activity and elation which necessitated his transfer to Boston.

He was alert, accessible and loquacious, mildly elated and quite hyperactive.

Physical and Laboratory Findings.—Negative.

Diagnosis.—Hypomania.

CASE 11. *Illustrating manic attack in a patient who had had two previous attacks of depression.*

This was a physician of 45 in whose family history there were at least two instances of "probable" manic depressive attacks. He himself had had two previous attacks of depression, the last one in November, 1918. He returned home, worked very hard in the epidemic of influenza and contracted the disease himself on December 3. In spite of the fact that he was ill he worked on, and it was noticed that he was becoming very nervous and talkative by the tenth of the month. A week later he was admitted to the hospital in a very severe attack of mania. He rolled about on the floor of his room, jabbered and shouted until the saliva foamed at his lips and kept up a constant flow of conversation, vituperative or approbative, according to the stimulus. He was committed.

CASE 12. *Illustrating another cyclothymic psychosis of the manic phase, precipitated by influenza in a patient with cyclothymic temperament but without previous attacks.*

Male, 38, born in Russia. Negative family history. He was quite well educated (speaking eight languages) and while distinctly cyclothymic in temperament (voluble, very active, gay, etc.) he had never had a psychotic episode.

Influenza at Christmas time for three days, and again four weeks before admission, this time for two weeks. March 4 he complained of being "nervous," cried because someone "excited" him, and suddenly decided to go to Montreal. He returned from there in less than a week, and continued to be hyperactive. "He had the feeling that he wanted to be good to everyone and kissed nearly everyone who came into his shop."

At this hospital he showed typical elation, hyperkinesis, and acceleration of thought processes, without definite delusions or hallucinations.

Physical and Laboratory Findings.—Negative.

Committed with a diagnosis of manic depressive, manic.

CASE 13. *Illustrating a type of manic depressive psychosis which might be called "schizophrenic mania" or Cyclothymia schizoprenoides.*

This was a nurse of 26 whose brother had died insane at the age of thirty and whose family history was otherwise negative. Her past history was negative except that, during training, she had had scarlet fever and diphtheria.

Present Illness.—During the convalescence from influenza and pneumonia, which lasted 15 days, she became noisily talkative and restless. Two days later she was violent and destructive, deluded and hallucinated. She was alternately depressed and exhilarated, querulous and amorous.

She was admitted at once to this hospital, where she was unco-operative but accessible, hyperactive, denudative, irrelevant, distractible and without insight. She gestured and laughed much, was frequently silly, incoherent and incomprehensible, manneristic and notably erotic.

A provisional diagnosis was made on the fifth day—manic depressive, manic, 5; dementia precox, 1; undiagnosed psychosis, 2.

The final diagnosis here was manic depressive, manic.

Commitment was recommended.

At the hospital to which she was transferred she admitted that she had heard voices at the psychopathic hospital but denied hearing them any longer, and elaborated a delusion about marrying a certain man. She had a few periods of excitement but recovered sufficiently to be discharged after seven months "recovered."

CASE 14. *Illustrating another case of "Cyclothymia schizophrenoids," this time depressed type, precipitated by influenza.* (Serial No. 77.)

This was a Lithuanian housewife who had a prolonged but not very severe attack of influenza. It was nearly a month afterward that she began to be depressed and needlessly apprehensive so that she was brought to the hospital. It was difficult to understand her broken English, but not so very difficult to understand her sobs and pleas. She seemed to rapidly improve, however, so that on the fifth day of her stay, in the absence of definite hallucinations or delusions, the staff favored a diagnosis of postinfluenzal depression despite the late occurrence. In the writer's notebook the case is recorded as "probably manic depressive, depressed." She was discharged at the end of ten days apparently nearly well, only to be readmitted a few months later because of a persistent delusion that her husband was going to kill her, which was accompanied by a great show of tears. Her husband "would not let her have enough money, overworked her and mistreated her, poisoned her food, prevented the doctors from treating her, and, in short, felt like getting rid of her the easiest way possible." She was under observation for a month and continued to be apprehensive, deluded and depressed, at times indifferent, occasionally blocked. She slowly improved somewhat.

CASE 15. *Illustrating the "reactive" or psychogenic type.* (Serial No. 158.) This was an Irish woman of 34 who had undoubtedly been much abused by her husband, but who stayed with him with the faithfulness so frequently observed in her sex and race. There was a suggestion of syphilitic infection but physical and laboratory findings were negative.

She was sick with influenza in October for four days, her tem-

perature reaching 102°. In December her daughter died, which was a great shock to her, and from that time on she was very much depressed. In spite of this her husband continued to be very abusive. For this reason it was difficult to determine whether or not ideas of persecution which she expressed frequently and which she dated back many years were delusions or expressions of fact. In addition to this, however, she showed profound depression with some agitation. She was undoubtedly suicidal and had made attempts in this direction. Her thinking was scattered and retarded. She was undoubtedly a case of manic depressive, depressed, tending toward the "reactive" or "psychogenic" type.

CASE 16. *A similar case, illustrating the reactive type of depression precipitated to a near psychotic degree by influenza.* (Serial No. 91.)

A pleasant and deferential young woman of 26, whose cup of trouble, especially domestic, has been rather overfull, but who shows no evidence of hypophrenia or seclusiveness. She was severely ill with influenza for five weeks, and since then has complained of floating specks before her eyes, aural discomfort with tinnitis and emotional depression. The worry over her misfortunes (past record—gonorrhea, etc.) became worse, interfered with her work, and she finally came here at advice of her physician. There was no suicidal tendency. She distinctly improved, although was still somewhat tearful at times. She always greeted the examiner with a smile and a cheerful salutation, was correctly oriented, not amnesic or misbehaved, and neither deluded nor hallucinated. The eye difficulty disappeared after mydriasis, and ophthalmoscopic, serological and physical examinations were negative. She was not hypokinetic, her train of thought not retarded. Not hypophrenic.

Summary of Psychological Examination.—The patient graded somewhat irregularly (V. T. 12) at a mental age of 13.5 years.

Physical Examination.—Negative.

At a full meeting presided over by Dr. E. E. Southard she was presented and it was finally concluded, in Dr. Southard's words, that, at that moment, "She is not psychotic, not psychopathic, but has a train of symptoms following influenza that have no more relation to psychopathia than the delirium of typhoid fever."

CASE 17. *Illustrating a simple depression in a simple mind, probably a cyclothymic depression precipitated by influenza, and an instance of the type of case frequently called postinfluenzal depression.* (Serial No. 118.)

Female, 45, born in Ireland.

Family History.—Negative.

Personal History.—Negative. "Always of quiet, even disposition, but always a worrier." Present status had been incipient for three months, dating from the time her daughter had influenza and she herself perhaps that, and perhaps merely a "cold." She had a slight fever and spent a few days in bed (?).

Two weeks later she began to be forgetful, disinclined to talk,

inactive, etc. Menses did not appear. She "looked sad," but denied it. Finally she was sent here by her family physician, upon the occasion of her wandering away from home twice, and walking aimlessly about the streets.

The mental examination showed mild depression, occasional slight retardation, but nothing further. Physical and laboratory findings were negative.

She was discharged improved after about three weeks.

Diagnosis.—Manic depressive, depressed.

CASE 18. *Illustrating a depression in a tabetic precipitated by influenza* (Serial No. 48) (this case was previously reported in an article dealing with the effect of influenza upon neurosyphilis) (31).

A man of 50 who was diagnosed *tabes dorsalis* in a competent general hospital 15 months prior to admission here. At that time he had had incontinence of urine for three or more years, failing vision for two years, and typical neurological signs. He received ten treatments intraspinally and an indefinite number of intramuscular and intravenous injections. From his history it is presumed that the disease had been considered arrested and treatment discontinued.

After a brief attack of influenza he had been up and about for something over a week when he rather suddenly became excited, and agitated. He insisted upon discussing his syphilis with relatives, declared that he knew he never could get well, that his bowels hadn't moved for weeks, that his case was hopeless, etc.

With these delusions and an apprehensive, mildly agitated depression he entered this hospital. He was retarded and hypokinetic without striking abnormalities in other fields.

The diagnosis of the staff were: Manic depressive, depressed, superimposed on *tabes dorsalis*, 3; depression with *tabes*, 6.

SUMMARY

If we divide all the depressions into cyclothymic and symptomatic we find that there are four of the former and six of the latter. Of the manias there are four of the cyclothymic type and two of the symptomatic. To the representatives of cyclothymia must, of course, be added the two cases of "mixed" type.

From this one is scarcely justified in making any more sweeping deductions than that cases of affective psychoses precipitated by influenza are approximately equally divided between those corresponding fairly typically to the "manic depressive psychosis" of Kraepelin and Stransky and symptomatic depressions dependent more or less obviously upon gross physical pathology.

It is interesting to classify these another way. Of the six cases of mania, three had had previous attacks, three had not. Of the two mixed cases, one was a first attack and one a fourth. But, on the

other hand, of the ten depressions, nine were first attacks and only one had had previous attacks. This was case No. 3, which seems to have been a typical instance of cyclothymic psychosis. This is a very striking point, even though the emphasis is somewhat slurred by the small total of the figures.

Eighteen cases are not enough to justify any conclusions smacking of dogmatism, but the indication is that influenza may, at times, produce depressions of the manic depressive, or again of a symptomatic type, and that it is more likely to do this than to produce attacks of mania. It seems more likely to bring about first attacks of depression than first attacks of mania, but least frequent of all are recurrent attacks of depression.

It is interesting to emphasize statistically the infrequency of depressive psychoses, particularly the cyclothymic types, after influenza. Thus, of our approximately 175 cases of psychoses associated with influenza, something over 50 were cases of avowed schizophrenia, 10 of neurosyphilis, an equal number of drug psychoses, and 7 (or more) of hypophrenia. But as we have just shown, there were altogether only ten of the group "manic-depressive" and only four of these were depressions! Of all essential depressions there were only ten! We may add to our reiteration that depression as a symptom in the psychoses of influenza is comparatively infrequent the deduction that the affect psychosis, par excellence (manic-depressive psychosis) is itself comparatively infrequently precipitated by influenza.

CONCLUSIONS

1. The question of emotional pathology as the product of influenza is a point of much practical and theoretical interest.

2. Depression has been regarded as an almost universal sequella of influenza, but upon analysis it appears that three distinct types of depression should be recognized.

3. First, there are the mild syndromes frequently seen by the general practitioner in normal individuals for some time after the attack of influenza and variously ascribed in the literature to cerebral toxemia, cardiac incompetence and hypoadrenalism. These never, or rarely, become severe enough to be regarded as psychoses. Aside from these the number of cases of postinfluenzal depressions is remarkably small!

4. Secondly, there are severe depressions even reaching the frankly psychotic degree, and frequently terminated by suicide, which, because of more or less obvious dependence upon some gross

physical pathology such as cerebral hemorrhage, tabes dorsalis, exhaustion, etc., might be adequately called reactive or symptomatic depressions. The literature would indicate that these were far more frequent after the influenza epidemic of 1890-92 than they have been in the recent waves of influenza.

5. Thirdly, instances of manic-depressive psychosis of typical forms (manic, mixed and depressed), may be precipitated by influenza either as the first attack or as recurrent attacks in individuals with a history of previous episodes.

6. Cyclothymic depressions are more frequently precipitated than manic attacks, and are far more apt to be precipitated as first attacks; the manic or mixed forms on the other hand occur in equal numbers as first and later attacks.

7. The occurrence of manic depressive psychosis is, on the whole, relatively infrequent. Of 175 cases in our series of psychoses associated with influenza, only ten belong in this group.

8. Depression as a symptom in the other influenzal psychoses was relatively infrequent in the recent epidemics.

9. Eighteen cases, illustrative of emotional pathology subsequent to influenza are cited, and the literature of both previous and recent epidemics is summarized.

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