

2. This improved condition is most conspicuous in tuberculous processes, especially in tuberculous ulcers.

3. As a whole, this therapeutic agent in our hands is a great disappointment, judged from the standard of Dr. Simon's results.

4. Sea water can be injected in surprisingly large amounts, even into children, without causing much pain or other untoward symptoms.

5. Sea water injected into the buttocks causes immediate desire to micturate, a continued easy and sometimes increased number of daily movements of the bowels, as a rule a slight tendency toward increase of bodily weight, and at times a distinct improvement in the well-being of the recipient.

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A STUDY OF THE PSYCHOSES BEGINNING IN THE PUERPERAL STATES.

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IN our present classification of mental diseases, puerperal insanity is not classed as an entity. The puerperium, pregnancy and lactation are considered by some authors as exciting causes, but none of the recent writers, with the exception of Kellogg, have attempted to separate a definite group of cases and call it puerperal insanity. Pregnancy and the puerperium are not uncommon happenings in the lives of most women, but they are given as the cause of insanity in only a few instances. Formerly many of the insanities occurring in women were ascribed to some defect in the generative organs, and even yet many gynecologists say that insanity in women is caused by reflex irritation of the uterus or some other poorly described and little known condition. Menstruation, pregnancy and lactation undoubtedly do have a marked influence on the nervous life of a woman, but that these factors of themselves can cause a psychosis is not entirely admitted to-day.

Donkin, in 1863, described two classes of puerperal mania on the distinctive features of which he strongly insisted:

Class 1. The mania is essentially acute and runs a brief course, it is always accompanied by a very rapid pulse, sthenic or asthenic, and generally a moist skin. The attack is usually ushered in and attended for some time by pain and heat of head, great intolerance to light, sound or any movement in the room, tinnitus aurium and pervigilium. There is a strong tendency to a fatal outcome, death taking place by way of coma or asthenia.

Class 2 is characterized by a complete absence of constitutional disorder, the pulse retains or occasionally exceeds very slightly its natural frequency. There is no danger to life, but the mental derangement is generally more or less chronic and frequently merges into a permanent, hopeless insanity.

The "non-constitutional group," which are dangerous only to reason and not to life, Donkin considers as merely cases of ordinary insanity, excited in females predisposed hereditarily or otherwise to the disease, by causes incident to parturition, such as nervous shock, hemorrhage, exhaustion and a variety of other causes. The acute "constitutional group" he endeavors to prove is caused by uremic poisoning and he cites several cases as examples. These observations have not been corroborated by later writers, and now the uremic poisoning theory is practically ignored. Various other writers have proposed theories for the causation of these psychoses, but they are yet only theories.

In the following series we have selected seventy cases in which the puerperium or the puerperal state was an exciting cause of the psychosis and have endeavored to determine which form of mental disturbance, according to our present classification, is most frequent, the most common age of onset, the time of onset and any other factors which might be determining agents in the disease. Three periods are used, the puerperium, pregnancy and lactation. The puerperium averages about six weeks from the completion of labor and extends through the chief part of uterine involution. Lactation extends from the puerperium up to the end of the nursing period.

Of these cases, 14.24% began during pregnancy, 61% during the puerperium and 24.6% during the lactation period. The form of disease and the time of onset is shown in the following table:

	Pregnancy.	Puerperium.	Lactation.	Total
Manic-depressive,	4	16	11	31
Dementia precox,	5	18	5	28
Amentia,	0	5	0	5
Infection delirium,	0	1	0	1
Epilepsy,	1	1	0	2
Neurasthenia,	0	0	1	1
General paralysis,	0	1	0	1
Unclassified,	0	1	0	1
	10	43	17	70

Pregnancy. — Ten of our cases, 14%, began during pregnancy. Aschaffenburg found 22%, Hoche 11.38% and Münzer 19% beginning in this period. In only 1 of these cases were there any toxic or uremic symptoms noted. This case, one of the depressed form of manic-depressive insanity, three weeks before term had an attack of blindness lasting one day. Labor was induced and the child died in convulsions three days afterwards. Six of these cases had an insane heredity. There was one abortion, the child being born dead. In 5 cases allowed to go to full term the child died soon after labor and in 3 cases the child was living several months after labor.

Two cases of manic-depressive insanity beginning in the later part of pregnancy were discharged as recovered and 2 remain in the house. One case of dementia precox was discharged as much improved, 2 cases improved, 1 unimproved and 1 case remains in the hospital. One case of epilepsy was discharged as improved.

Puerperium. — Forty-three of our cases began

during the puerperium. There were 18 cases of dementia precox, 5 of amentia, 16 of manic-depressive insanity, 1 infection delirium, 1 case of epilepsy, 1 case of general paralysis and 1 unclassified case. Thirty-four of these cases had their onset within two weeks after labor. Eight cases of dementia precox and 11 cases of manic-depressive insanity had insane heredity. Two cases of amentia and the one case of epilepsy had near relatives insane. One woman suffering with dementia precox killed her child, this being the only homicide in the series. Three patients with dementia precox and 4 with manic-depressive insanity threatened suicide and 2 cases with manic-depressive insanity and 1 case with amentia attempted suicide. Homicide was threatened by 6 patients suffering with dementia precox.

Septicemia was given as a contributing cause in 5 cases, 2 cases of dementia precox, 2 of manic-depressive insanity and the case of infection delirium. One case with depression had severe vomiting throughout pregnancy and the psychosis began three weeks after childbirth. One manic-depressive case had mastitis. One girl of nineteen gave birth to an illegitimate child and became depressed three weeks afterwards. In 1 case of dementia precox uremia followed labor, and in 1 case there was eclampsia with version. The only case of general paralysis we have had attacks of vertigo with considerable vomiting during pregnancy, but the mental symptoms were not noticed until five weeks after labor.

Lactation.—In Aschaffenburg's series, 50% of the cases beginning in this period belonged to the manic-depressive group. In our series there were 11 cases of manic-depressive insanity, 5 maniacal and 6 depressed cases, 5 cases of dementia precox and 1 case of neurasthenia. One of our manic-depressive cases has been in the hospital four times with maniacal attacks each beginning in the second or third month of the lactation period.

One case of manic-depressive insanity was discharged as much improved, 1 improved, 1 unimproved and 7 cases remain in the hospital. One case of dementia precox was discharged as improved and 4 cases remain in the house. The case of neurasthenia began three months post-partum with some depression, muscular weakness and a sense of physical and mental fatigue and lack of ability to apply herself to any sort of work, and this was accompanied with a keen insight into her condition.

The condition on discharge of all three groups is as follows:

	Recovered.	Much Improved.	Improved.	Unimproved.	Died.	Remained.	Total.
Pregnancy,	2	1	3	1	0	3	10
Puerperium,	8	7	7	3	3	15	43
Lactation,	0	1	3	1	0	12	17
	10	9	13	5	3	30	70

Dementia precox.—There were 28 cases of dementia precox in our series, 5 beginning in pregnancy, 18 in the puerperium and 5 during the lactation period. Those cases beginning during pregnancy had their onset in the latter part. The majority of the cases beginning in the puerperium first showed mental symptoms within two weeks after labor and no case in this series began later than four months post-partum.

Pregnancy was normal in 24 cases. There was persistent vomiting in 1 case, uremia in 1 case, eclampsia and nervous irritability in 1 case each. In 3 cases there were noteworthy subsidiary causes, septicemia in 2 and neurotic tendency in 1. Fifteen cases were multiparæ and 13 primiparæ. Our tables show that age has little influence. Divided into periods of five years each, from nineteen to twenty-four years, there were 7 cases; from twenty-five to twenty-nine, 7 cases; from thirty to thirty-four, 7 cases; thirty-five to thirty-nine, 6 cases, and 1 case began at forty-three. Four cases began at twenty-nine and 4 at thirty years of age.

Heredity was noted in 13 cases. All these patients had insane relatives and some had also alcoholic, apoplectic or neurotic heredity. Only 25% were born in the United States, 25% were born in Nova Scotia, 25% were born in Ireland and the remaining 25% were born in England or Europe. Suicide was attempted in no case, but was threatened by 3 patients. Seven patients threatened homicide and one woman did kill her child, but her husband thought it was an accident.

Labor was normal in 16 cases, difficult in 2 and instrumental in 4. There was one miscarriage. The onset in almost all the cases was comparatively sudden and hallucinations of sight and hearing were frequently present. Fear was a prominent symptom in 4 cases and delusions of persecution were noted in 10 cases. Jealousy and ideas of infidelity on the part of the husband were noted in 4. Headache was relatively infrequent, occurring only in 2 cases. Three patients bore children after the onset of the disease and after the birth of each child there was an exacerbation of the acute symptoms. In one woman the disease began after the birth of her second child, and after each of the four succeeding childbirths she had a marked hallucinatory outburst with a period of restlessness and ideas of persecution and infidelity.

Manic-depressive insanity.—In this group there were 12 cases in the maniacal and 18 in the depressed phase. Heredity was noted in 14 cases. In these cases the heredity was not as near as in the group of dementia precox cases. In the latter it was common to have father, mother, brother or sister insane, while in this group comparatively few had near relatives insane, but would have uncles or aunts insane. Seven maniacal patients were multiparæ and 5 primiparæ, while 14 depressed patients were multiparæ and 4 were primiparæ.

Age seemed to have little to do with either phase of the disease. In the maniacal cases 6 began between nineteen and twenty-nine years and

6 between twenty-nine and thirty-nine. In the depressed phase 8 began between nineteen and twenty-nine, and 9 between thirty and thirty-seven. Ten cases had had other attacks of alienation. Of these, 6 had their first attack after the birth of the first child and 2 had had attacks after the birth of their second child. One had an attack after the first child, three succeeding attacks without childbirth and an attack after the birth of her second child. One woman had an attack after the birth of her first and sixth child and 1 had attacks after the first, second and fourth children. One had an attack after the birth of her third child and three subsequent attacks without any childbirths. One had attacks following the births of her third and fifth children. Two cases had had attacks before the birth of any children and following childbirth had subsequent attacks.

One case in the manic phase began in pregnancy while 3 cases in the depressed phase commenced in this period. One case beginning in the puerperium showed unusual irritability during pregnancy. One depressed case, who first showed mental symptoms three weeks after childbirth, suffered throughout pregnancy from severe vomiting attacks which ceased at labor. One depressed case showed symptoms of uremic poisoning.

All the cases beginning in the puerperium had their onset within one month after labor, and the majority commenced in the ten days following childbirth. The cases beginning in the lactation period commenced for the most part in the first three months after labor. Of the maniacal cases, 50% were born in the United States and 33% were born in Ireland. Of the depressed cases, 33% were native born and only 4% were born in Ireland.

Suicide was threatened by 1 maniacal and 3 depressed patients and attempted by the 3 depressed women. There is no record of any of the patients in this group attempting or threatening homicide.

Labor was instrumental in 5 maniacal and 4 depressed cases. Mastitis occurred in 1 maniacal and 1 depressed case. Two depressed women had septicemia following labor. Worry over an illegitimate child was a marked feature in a nineteen-year-old primiparæ with depression. Worry over domestic difficulties and financial affairs were given as contributing factors in 2 maniacal cases.

The symptoms of onset were more alike in the maniacal than in the depressed cases. Restlessness and talkativeness were early symptoms in 10 cases. Two maniacal cases had a short period of depression at the beginning of their attack. Auditory and visual hallucinations were noted in 4 maniacal cases. The hallucinations in these cases were fleeting, changeable, and as two of the patients said, very much like a dream. It is possible that there was a toxic element in these cases as all of them were instrumental deliveries. Hyper-religiosity was marked in 2 manic and 2 depressed cases. Fear and ideas of reference were marked in 5 depressed cases. Consciousness was markedly clouded in 3 depressed cases.

Amentia. — There were 5 cases of amentia, 7% of the total number. Three were multiparæ and 2 primiparæ. Two cases had insane heredity. In every case labor was normal though prolonged. Three cases recovered, 1 was discharged much improved and 1 case died of pulmonary tuberculosis. All the patients were between the ages of twenty-four and twenty-nine. Four of the cases had onset within two weeks after labor, and 1 first showed mental symptoms six weeks post-partum. Fear, restlessness and clouding of consciousness were the prominent symptoms of onset. Auditory and visual hallucinations were present in all the cases at some period. One case had severe attacks of headache following labor and 1 case showed marked emotional instability, laughing and crying with very slight cause. The onset in these cases is rather sudden, the psychosis is of comparatively short duration and, as far as our records show, there is no relapse.

Neurasthenia. — There was 1 case of neurasthenia, the patient being a woman of twenty-eight years of age. The trouble began three months after the birth of her first child, at which time she felt uncertain of herself, and fatigued easily. A month later she again became pregnant and for a short time her condition seemed to improve, but after the second child was born she began to worry about her work and could not sleep well because she worried about how she was going to feel the next day. She had a very good insight and said that while she realized she had no ground for her complaint, she felt unable to control herself and lacked the will power necessary to keep up with her responsibilities. After a three-months' stay in the hospital she was discharged as recovered and a letter from her husband received several months later said that she was as well as ever.

Epilepsy. — One of our 2 cases of epilepsy began when the patient was seven months pregnant and the other began immediately after labor. In the first case the convulsions were severe and led to a marked mental deterioration in a very short time. In the second case, after the first few severe convulsions which occurred immediately after labor, the convulsions were more the type of petit mal and these continued for sixteen years, at which time the patient had a marked hallucinatory outburst characterized by severe clouding of consciousness with grandiose ideas, the attack lasting for about a year and being followed by a mild dementia.

General paralysis. — There was only 1 case of general paralysis in this series. In this case as far as could be determined there was no luetic history. There were several attacks of vertigo during pregnancy, but no convulsive seizures. The mental symptoms appeared five weeks after the birth of the child and consisted of memory defects, restlessness, defects in judgment and some clouding of consciousness. It is doubtful if pregnancy and labor had any more than an accelerating action in this case. The woman would undoubtedly have become paretic at some later date, but under the strong influence of the

changes in the organism caused by childbearing, the causes of paresis were aided and their action hastened.

The cause of the psychosis in these women is yet to be found. Heredity plays a part as in other cases of mental disorder, but these patients did not have a poorer heredity than many other women who did not have psychosis after childbirth or other patients in whom the psychosis did not begin after childbirth, but was initiated by some other cause. In very few cases were there abnormalities shown in the course of pregnancy of such moment as to call forth special attention. After childbirth and pregnancy there is an increased drain on the mother which must be considered, and when added to some psychic cause such as grief or worry and when there is a bad family history a definite reason for a psychosis can be established. In only 3 of our cases was there a special mental strain noted, and in these cases the family history was not especially bad. Infection after labor, with the consequent introduction of bacterial toxins into a system already loaded to the breaking point is a very good cause for mental trouble and was present in 7 of our cases, 10%. Worry over illegitimate children is a psychogenic factor which seems to be more common on the Continent than in this country. Only 2 of our cases bore illegitimate children and had this as a cause.

But as far as we can determine there is no definite reason why a psychosis should be initiated by pregnancy, labor or lactation and there is no way of determining why one woman develops one psychosis and another woman develops another, or why one woman is exhilarated and another depressed. The puerperal state doubtless offers some exciting cause in a certain number of women, but how these women differ from other women and how the conditions in the same women differ at different periods are questions which are as yet unsolved.

CONCLUSIONS.

There is no psychosis which can be strictly called a puerperal psychosis, but there is no doubt that the puerperal states can act as an exciting cause of a psychosis in certain women under certain conditions, which conditions are at present unknown.

The mortality of children born of mothers who become insane during pregnancy is very great.

The puerperal states may be exciting causes of attacks of manic-depressive insanity in women who have never before been insane and in women who have had previous attacks of this disease childbearing is apt to be the exciting cause of another attack. In women suffering from dementia precox the puerperal states cause an exacerbation of the acute symptoms and cause the psychosis to become more active.

Homicide is comparatively rare among women becoming insane during this period and is more liable to occur in patients suffering from dementia precox than any other psychosis, while attempts at suicide are less numerous in these cases, but are more liable to occur in patients suffering from the depressed form of manic-depressive insanity.

Eclampsia and the toxic infections are not more frequent in women who become insane than in women who are normal mentally and these factors are of little moment in any but the toxic deliria.

Illegitimate children are not given as the cause of insanity as frequently in this country as in Europe. The reason for this is not determined.

Comparatively few women who later become insane show abnormalities in pregnancy and one cannot tell from the character of the pregnancy whether a woman will become insane after labor or during lactation.

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THE EDUCATION OF THE CHILD'S NERVOUS SYSTEM.*

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A PROPER appreciation of the nature of a child's nervous system is fast becoming of the greatest importance to the physician, parent and teacher. To the physician first, because upon him rests the responsibility of instructing parents and teachers as to the characteristics and limitations of the child's nervous system. To the parents next, because it is their duty to have an intimate knowledge of their children's physical and mental condition, and in spite of the fact that they so frequently turn over to the teacher all care in relation to the training of their child, nevertheless the responsibility is primarily their own and must not be avoided. Finally, to the teacher, because even when parents assume their own responsibility, there is still a large share which must fall upon her and she should not be ignorant as to what that responsibility demands from her.

The training of an infant is the first requisite in producing a normal nervous system. It would seem as if this subject had been emphasized sufficiently during the last decade to produce a lasting impression upon both physicians and parents, but in spite of the growing tendency for mothers to recognize this need, the majority are still ignorant as to the methods to follow, and a large number of physicians are still negligent concerning their responsibility in giving instructions to parents.

Mothers must be taught first the reason for such training, that it is much more far-reaching than the simple production of a good-natured, healthy baby, that it is more for the child's need than for the parents' comfort, that it is, above all, the building of a substantial foundation for a future normal, healthful and well-controlled nervous system. They must also be taught the necessity for beginning such training at birth, and that the first few months are the most important.

* An elaboration of a paper read before the Clinical Club of Springfield, Feb. 10, 1909, and read as here given before a company of public school teachers at Springfield, Mass., March 16, 1909.