

6. Nerve cell and, to a lesser degree, neuroglia cell pigmentation was constant.

7. Weigert myelin sheath preparations invariably showed alterations in some region, preferring those mentioned in paragraph 5, again resembling the changes which accompany pernicious anemia. The posterior and postero-lateral columns formed the region of election for these chronic changes (excluding certain questionable conditions in the periphery), and posterior nerve root degeneration (of slight or moderate degree) was common.

8. Fibrillary gliosis was constant, but varying in degree from case to case, corresponding very closely with changes as demonstrated by the Weigert myelin sheath method. Mallory's phosphotungstic hematein method was used for this demonstration. Closure of the central canal and some instances of hydromyelia were found.

9. Corpora amylacea were most abundant external to the dorsal horns and in the neighborhood of the substantia gelatinosa. They were also common in the posterior columns and the periphery of the cord. The distribution of the corpora amylacea appeared consistent with the hypothesis of their derivation from the neuroglia.

10. The co-existence of marked pigmentation with relatively intact Nissl bodies in many ganglion cells was noteworthy. Many chronic changes were found. Satellitosis was occasionally displayed, as also axonal changes.

11. Vascular changes were frequent, but perhaps less marked than might have been expected.

12. Those in advanced years very frequently present a series of symptoms consisting in more or less marked impairment of muscular strength and control; a spastic, shuffling, tottering gait; a varying disturbance of the deep and superficial reflexes; tremor and sensory disturbance. These symptoms represent not merely conditions of general decay, because they may be present even when not associated with signs of decay in other parts of the body, and, on the other hand, may be absent even when such signs are present, but are constantly associated with a definite pathological change in the spinal cord, in many respects like that of pernicious anemia, and should not be interpreted as direct manifestations of arteriosclerosis.

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EXPLANATION OF PLATES.

- FIG. I. Spindle-shaped masses of golden-brown pigment seen in the meninges. Marchi preparation.
- FIG. II. Granules seen especially in the intima of an artery and portion of a vein, from the meninges, on the ventral aspect of the cord. In the lumen are several phagocytic cells. Marchi preparation.
- FIG. III. Longitudinal sections of posterior root fibers. Marchi preparation.
- FIG. IV. Large ganglion cells containing pigment. Marchi preparation.
- FIG. V. Marginal and slight diffuse posterior sclerosis. Weigert preparation.
- FIG. VI. Wedge-shaped marginal sclerosis. Weigert preparation.
- FIGS. VII, VIII, IX, X. Weigert preparations showing sclerosis of the posterior columns. Note the varying areas involved.
- FIGS. XI to XVIII. Diagrams representing lesions, variable in degree and location, shown by the Weigert method. A. Complete degeneration. B. Well-marked degeneration. C. Moderate degeneration. D. Slight degeneration. E. Very slight degeneration.
- FIG. XIX. Increase of peripheral glial ring. Weigert preparation.
- FIG. XX. Perivascular increase of neuroglia. Mallory's method.
- FIG. XXI. Hydromyelia. Weigert preparation.
- FIG. XXII. Corpora amylacea in the peripheral glial ring.

VI.

AN HISTOLOGICAL STUDY OF THE THYROID GLAND IN MENTAL DISEASE, WITH ESPECIAL RELATION TO CHRONIC THYROIDITIS.

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THE present study of the thyroid gland in cases of mental disease is mainly histological, but contains certain anatomical and clinical correlations. Such a study is appropriate both on account of the general trend of recent speculations concerning ductless glands and by reason of certain special claims concerning the value of partial thyroidectomy in dementia precox. It was Berkley's paper¹ on partial thyroidectomy, read at the Cincinnati meeting of the American Medico-Psychological Association, 1908, which directly occasioned this study, as it was hoped to show by a study of thyroids in dementia precox, controlled by the glands in other conditions, whether any differential conditions were obtained in dementia precox. Dock's chapter on "Diseases of the Thyroid Gland" in Osler's "Modern Medicine"² contains numerous references to nervous and mental states in exophthalmic goiter, and the subsequent chapter³ describes such states in cretinism and myxedema. Similar statements appear in Ochsner and Thompson's recent book.⁴

Berkley's work, while very speculative, has the merit of not concealing the speculative character of any of his reasonings. Out of a large list of drugs employed to improve the condition of katatonics, only iodine had an effect upon the patients. Even a small dose (1-250 gr. iodine, as iodized starch) might wake the patients from their stupor, increase dermatographia, heighten reflexes, increase hyperidrosis and quicken the pulse—all temporarily. Iodothyron and desiccated thyroid also made the patients worse. Alternating treatment—thyroid, 1 or 2 gr. daily for a week, followed by alcoholic solution of lecithin daily for another week—secured some good results. Large quantities of milk were also given to these patients.

Partial ablation of the thyroid was then performed by Follis in a number of cases, with more or less rapid recovery in Cases I, II, III, IV, VIII; no results in V, VI, VII. The three unfavorable cases had been of longer duration, and Berkley

suggests that organic brain changes had set in in these cases.

Berkley's idea of the mechanism of the thyroid lobectomy procedure in procuring good results in katatonia is expressed by him as follows: "It is possible, from the symptoms, that in katatonia we have a perversion of the secretion of that organ and that partial thyroidectomy induces a return to the normal in the secretion of the remaining portion of the gland. The return to the natural state of the reflexes, the decrease of the mechanical muscular irritability, as well as of the dermatographia, the loss of pigmentation, also of the doughy, pasty character of the skin (most noticeable in the prodromal and stage of mutism), and the later return to the normal both of the mental as well as physical state, are at least suggestive that partial ablation of the gland is a factor, and has something to do with the rapid recovery."

McCallum's histological results in some of the Berkley-Follis cases were as follows:

I. Female, nineteen, duration of katatonia two years nine months, partial thyroidectomy. "The alveoli are distended with homogeneous colloid, which, however, show some variations in its staining qualities. Some alveoli are filled with pale gray, others with pale pink, and others with bluish-pink color. For the most part they are larger than normal and their epithelial cells are very low and flat. In some places, however, the large alveoli are surrounded by very small ones. There is in most instances no distinct folding of the alveolar walls. In one or two alveoli, however, there is a remarkable scalloping of the epithelium by its being uplifted by capillaries."

II. Male, twenty-one, duration of katatonia about six months, partial thyroidectomy. "The thyroid is rather fibrous-looking; strands of connective tissue subdivide it into lobules. The alveoli are, for the most part, large, but very irregular in form, with buds and infoldings. The epithelium is cubical, distinctly higher than normal, but not as high as that seen in exophthalmic goiter. There are numerous small alveoli associated with these larger ones, and these also have high epithelium. There are some scattered patches of lymphoid tissue through the thyroid."

III. Female, twenty-eight, duration of katatonia about four months, partial thyroidectomy. "A part of the gland seems a little firmer than the rest and is more translucent. The gland in general is almost normal looking; it is reddish-gray and quite homogeneous. On section, rather translucent, with scattered points of yellowish opacity which are visible only on most careful inspection." "It is composed of uniform, rather small, alveoli, unusually rounded in form and showing no infolding of the epithelium. The alveoli are lined with a flattened epithelium, which is perfectly uniform and normal-looking throughout. The blood vessels show some evidences of calcification and hyaline degeneration in their media."

IV. Male, nineteen, duration of katatonia about eight months, partial thyroidectomy. "Portion of right thyroid removed, weighing 2.96 gm. Small mass of soft tissue, homogeneous and uniform in appearance throughout. On cut surface the tissue is moist and glutinous, grayish-red. No apparent excess of fibrous tissue, no nodules." "It is composed of alveoli of moderate size, very round and smooth in outline, and of fairly uniform size. They contain a good deal of homogeneous colloid. The alveoli are lined with flat-

tened epithelium, which is entirely uniform in character. The connective tissue forms some quite coarse bundles throughout the gland, which carry abundant blood vessels, but on the whole it does not seem to be markedly increased in amount. There is an unfolding of the epithelial layer." "Second ablation, Jan. 17, 1908. Microscopically the alveoli are distended with colloid, which is thin and pale, staining sometimes lilac, sometimes pink. The alveolar walls are thin and the epithelium is low and flat. The alveoli in general are larger than in the first specimen. Some of them are surrounded by small columns of other alveoli of smaller size, but there is no direct evidence of infolding of the epithelium. The connective tissue is abundant."

Farrar examined the thyroid tissue from Case VIII.

VIII. Male, twenty-five, duration of katatonia about five months, partial thyroidectomy. Thyroid: "The only divergence from the normal was the distention of practically all the follicles with colloid material. The lining epithelial cells are obviously much flattened, there being nowhere any cylindrical cells. Many follicles were of considerable size and obviously represented confluences of several follicles. In many instances the distended follicles occupied the microscopic field, the interfollicular connective tissue fibers being reduced to a minimum. In themselves, the connective tissue and the blood vessels showed no pathological changes; also there was no evidence of any inflammatory process."

For the convenience of future workers, the results of thyroid examination in five cases of dementia precox autopsied at the Danvers State Hospital are here printed:

1034, 12756, male, thirty-five, dementia precox, two years; pulmonary gangrene, recent. There is no gross change in the thyroid. Microscopically, no increase is noted in either interlobular or interfollicular connective tissue. The blood vessels are normal. The follicles are uniformly small and regular in outline, the epithelium is usually flattened or low cuboidal. The colloid in the follicle is deeply evenly staining and retracted from the epithelium. No colloid is seen in the interstitial tissue.

1036, 11,317, male, twenty-seven, dementia precox, five years; multiple thrombi of heart, recent. Grossly nothing was noted at autopsy. Microscopically, the connective tissue, both interlobular and interfollicular, shows a slight increase and blood vessels are normal. The follicles are generally small, fairly regular in outline and the epithelium usually cuboidal. Colloid in the follicle is deeply but unevenly staining, in some cases retracted from the epithelium and containing crystals and vacuoles, in others filling the follicle, but unevenly staining. A small amount of colloid is noted in the interstitial tissue. There are occasionally clumps of cells.

1062, 7987, female, thirty-eight, dementia precox, eleven years; pulmonary tuberculosis, one + year. In gross appearance the thyroid is very thin. There is no increase of connective tissue and the vessels are normal in appearance. The follicles are of varying size, and in outline some are regular and others contain infoldings of epithelium several layers in thickness. The epithelium is in some instances flat and in others cuboidal and often reduplicated. There is a marked variation in the colloid, in some cases pale, containing many vacuoles, with epithelium and red blood cells, and in others the colloid is deeply and evenly staining, and in

most instances fills the follicle. There is a small amount of colloid in the interstitial tissue. Occasional clumps of cells are noted.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months. Grossly the thyroid is small and the lateral lobes symmetrical. There is but a slight increase in connective tissue, and the vessels are not notable. The follicles are usually small, some of medium size, usually regular in outline, with epithelium, occasionally flattened, but usually cuboidal. Few follicles are empty, but most contain colloid, which in some instances is pale, but for the most part deeply and unevenly stained. Several contain colloid with deeply staining center surrounded by a pale ring. In such instances the epithelium is flat. No colloid is seen in the interstitial tissue.

1317, 12143, female, forty-four, dementia precox, twenty-one years' duration; carcinoma of breast, one year. The thyroid is larger than normal, not weighed, but is quite closely connected with the mediastinal tissue. There is a slight increase in both interlobular and interfollicular connective tissue. Blood vessels are normal, but increased in number. The follicles are small, usually regular in outline, but in some cases indented with reduplication of epithelium or by blood vessels between epithelium and basement membrane. The epithelium is flat or low cuboidal. Few follicles are empty, but many contain unevenly deeply staining colloid retracted from the epithelium. No colloid is noted in the interstitial tissue.

The sections were prepared from Zenker fixed material and stained with eosin methylene blue, Mallory's connective tissue stain and phosphotungstic acid hematein.

For the understanding of such data, it is obviously necessary to study the thyroid in other conditions than dementia precox. Ramadier and Marchand have made such a study⁵ showing that microscopic changes are more frequent in the insane from goitrous regions. They find microscopic changes very frequently, as often in the sane as in the insane. Of 48 cases autopsied in the institution at Doir-et-Cher, there were

	Cases.
Normal,	8
Slight sclerosis,	18
In places sclerotic,	5
Diffuse atrophic sclerosis,	14
Inflammatory changes,	3

Reviews of this work have considered the results wholly negative, apparently on the ground that 8 normal thyroids among 48 from insane patients exclude any possible relation between thyroid disease and insanity. Such a view proceeds on the broken hypothesis that insanity is a unitary condition.

It has been thought worth while to follow Ramadier and Marchand with a similar analysis of 50 cases, coming from a non-goitrous region.

The general results are shown in the accompanying table:

	Cases.
Normal, microscopically,	11
Slight chronic fibrous thyroiditis,	16
Marked chronic fibrous thyroiditis,	11
Chronic interstitial thyroiditis (mononuclear cell deposits),	*1

* In a case of acromegaly published by Barrett.⁶

	Cases.
Epithelial infolding pronounced,	18
Colloid excess (interstitial),	8
Colloid excess (follicular),	8
Exophthalmic goiter,	1

The cases of macroscopic enlargement numbered 8.

905, 12046, female, sixty-five, organic dementia, two + years; bronchopneumonia, recent.

1058, 12162, female, sixty-one, senile dementia, ?; lobar pneumonia, recent.

1091, 11332, male, seventy-four, paralysis agitans, six years; septicemia, recent.

1139, 13004, female, seventy-seven, manic-depressive insanity, thirty-nine years; bronchopneumonia, recent.

1148, 13530, female, twenty-five, cerebral gliosis with exophthalmic goitre, one + year; bronchopneumonia, recent.

1162, 13576, female, fourteen, status epilepticus, five years; status epilepticus.

1227, 11984, female, thirty-seven, epilepsy, congenital; bronchopneumonia, recent.

1317, 12143, female, forty-four, dementia precox, twenty-one years; carcinoma, one year.

The cases of small thyroid numbered 6:

1054, 12897, male, fifty-one, general paresis, two years; bronchopneumonia, recent.

1062, 7987, female, thirty-eight, dementia precox, eleven years; pulmonary tuberculosis, one + year.

1064, 12988, male, eighty-seven, senile dementia, five years; bronchopneumonia, recent.

1182, 12824, female, seventy-two, organic dementia, eight years; myocarditis, recent.

1273, 14365, female, fifty-one, neurasthenia, thirty + years; dysentery, recent.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months.

The cases of cystic thyroid numbered 4, and, besides 905 and 1091 (see list of enlargement cases), were as follows:

1053, 736, male, seventy-two, organic dementia; bronchopneumonia, recent.

1056, 13011, female, forty-one, toxic delirium, three weeks; cerebrospinal meningitis, recent.

There are 16 cases of slight chronic fibrous thyroiditis as follows:

1031, 12719, male, eight-five, organic dementia, five years; hypostatic pneumonia, recent.

1035, 12765, male, forty-five, imbecile, congenital; bronchopneumonia, recent.

1037, 12835, male, twenty-three, juvenile general paresis, five years; bronchopneumonia, recent.

1058, 12162, female, sixty-one, senile dementia; lobar pneumonia, recent.

1059, 12175, female, seventy-eight, senile dementia, seven + years; carcinoma, one + year.

1060, 12987, male, sixty-nine, senile dementia, two + years; thrombosis, recent.

1064, 12988, male, eighty-seven, senile dementia, five years; bronchopneumonia, recent.

1126, 10854, male, forty-seven, general paresis, six years; pulmonary tuberculosis.

1139, 13004, female, seventy-seven, manic-depressive, thirty-nine years; bronchopneumonia, recent.

1148, 13530, female, twenty-five, cerebral gliosis with exophthalmic goiter, one year; bronchopneumonia, recent.

	Total number.	GROSS APPEARANCE.			CONNECTIVE TISSUE.		FOLLICLES.				EPITHELIUM.				AMOUNT OF COLLOID IN FOLLICLE.			AMOUNT OF COLLOID IN INTERSTITIAL TISSUE.			BLOOD VESSELS.
		Enlarged.	Small.	Cystic.	Increase.	Increase.	Small.	Medium.	Large.	Variable.	Flat.	Cuboidal.	Reduplicated.	Mixed.	Absent.	Small.	Medium.	Large.	Small.	Large.	Sclerosis.
<i>Age</i>																					
1-30	7	2	1	0	4	2	4	1	0	2	5	1	4	3	0	2	3	2	2	1	0
31-40	8	1	1	0	1	1	3	1	1	3	1	1	4	5	2	1	7	0	4	0	0
41-50	8	1	0	1	5	3	1	4	2	1	0	0	3	6	1	0	6	2	2	1	0
51-60	7	0	2	0	4	3	5	0	1	1	2	0	2	5	0	2	5	0	0	1	0
61-70	8	2	0	1	3	2	3	2	0	3	1	3	2	2	0	2	5	1	4	0	1
71-80	9	2	1	2	7	6	5	2	0	2	0	3	1	5	2	3	5	1	1	3	0
81-90	3	0	1	0	1	1	2	0	0	1	0	0	2	2	1	0	1	2	0	2	1
<i>Sex</i>																					
Male	25	1	2	2	11	9	12	7	2	4	2	4	11	12	2	6	15	4	6	4	2
Female	25	7	4	2	14	9	11	3	2	9	2	4	7	16	4	4	17	4	7	4	0
<i>Mental Disease</i>																					
General paresis	10	0	1	0	4	3	6	4	0	0	2	0	4	6	1	3	6	1	3	1	0
Dementia precox	5	1	2	0	3	2	4	0	1	0	0	0	1	5	1	1	4	0	1	0	0
Manic-depressive	3	1	0	0	1	0	1	1	0	1	0	1	2	1	0	1	1	1	0	1	0
Organic dementia	9	1	1	1	4	4	5	1	0	3	2	2	2	3	1	0	8	1	3	1	2
Senile dementia	8	1	1	1	4	3	3	2	1	2	0	2	2	5	1	4	3	1	1	3	0
Epilepsy	3	2	0	0	1	1	1	0	0	2	0	2	0	1	0	1	1	1	1	0	0
Imbecility	3	0	0	0	1	1	0	0	1	2	0	0	3	0	0	0	3	0	2	0	0
Paralysis agitans	2	1	0	1	1	1	1	1	0	0	0	1	0	1	1	0	2	0	1	0	0
Special group *	7	1	1	1	5	3	2	1	1	3	0	0	4	5	1	0	4	3	1	2	0
<i>Terminal Disease</i>																					
Acute disease	36	6	4	4	18	14	17	8	2	9	3	7	15	18	4	7	23	6	11	7	1
Tuberculosis	7	0	2	0	3	2	3	2	1	1	0	0	2	6	1	1	5	1	1	0	1
Carcinoma	3	1	0	0	2	0	2	0	1	0	0	0	0	3	0	2	1	0	1	1	0
Epilepsy, brain tumor and cerebral hemorrhage	4	1	0	0	2	2	1	0	0	3	1	1	1	1	1	0	3	1	1	0	0

* Special group consists of toxic delirium, infection psychosis, central neuritis, neurasthenia and exophthalmic goiter.

1198, 6463, female, seventy-eight, paralysis agitans, sixteen years; nephritis.

1204, 13927, male, fifty-eight, infectious psychosis, one month; multiple thrombi.

1207, 13894, male, sixty-five, organic dementia, two + years; myocarditis, chronic.

1213, 13950, female, fifty-seven, senile dementia, six months; bronchopneumonia, recent.

1231, 13979, male, sixty-four, imbecile.

1317, 12143, female, forty-four, dementia precox, twenty-one years; carcinoma, one year.

The 11 cases of marked chronic fibrous thyroiditis are as follows:

901, 10798, female, fifty-three, brain tumor, three years; brain tumor, three years.

1036, 11317, male, twenty-seven, dementia precox, five years; multiple thrombi, recent.

1038, 12775, male, thirty-one, general paresis, one year; thrombosis, recent.

1056, 13011, female, forty-one, toxic delirium, three weeks; cerebrospinal meningitis, recent.

1063, 12239, female, seventy-seven, senile dementia; cerebral hemorrhage, recent.

1085, 11217, female, seventy-five, epilepsy; enterocolitis, recent.

1091, 11332, male, seventy-four, paralysis agitans, six years; septicemia, recent.*

1182, 12824, female, seventy-two, organic dementia, eight years; myocarditis, recent.

* There was marked sclerosis of the thyroid artery, while arteries of corresponding size elsewhere in the body showed little sclerosis.

1225, 13891, male, forty-one, general paresis, six months; purulent pleuritis, recent.

1273, 14365, female, fifty-one, neurasthenia, thirty + years; dysentery, recent.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months.

The 18 cases showing epithelial infolding, with the exception of 1031, 1035, 1037, 1038, 1148, 1204, 1213, 1231 and 1310, given in above lists, are as follows:

984, 1750, male, thirty-eight, imbecile, congenital; bronchopneumonia, recent.

1033, 11385, male, forty-five, general paresis, four years; bronchopneumonia, recent.

1061, 6833, male, seventy-eight, senile dementia, twenty-three years; lobar pneumonia, recent.

1067, 9590, female, sixty-four, manic-depressive, seven years; multiple thrombosis, recent.

1109, 9073, male, eighty-three, delusional insanity (diabetic), fifteen years; bronchopneumonia, recent.

1112, 13262, female, forty, central neuritis, three years; central neuritis.

1212, 13955, female, thirty-seven, manic-depressive insanity, eight months; bronchopneumonia, recent.

1226, 13941, male, twenty-three, juvenile general paresis, three + years; Addison's disease, recent.

1229, 14013, female, forty-five, organic dementia, one year; brain tumor.

There are 8 cases of excess of colloid in follicles,

which, with the exception of the above listed 1056, 1064, 1109, 1126, 1139, are as follows:

1162, 13576, female, fourteen, status epilepticus, five years; status epilepticus.

1191, 13795, female, twenty-five, acute delirium, one month; acute delirium.

1207, 13894, male, sixty-five, organic dementia, two + years; chronic myocarditis.

Of the 8 cases showing excess of colloid in interstitial tissue, 7 have been previously listed, namely, 1031, 1056, 1059, 1061, 1064, 1139 and 1148; the remainder is as follows:

1054, 12897, male, fifty-one, general paresis, two years; bronchopneumonia, recent.

Thyroid in emaciation.	Total No.	Emaciation.
Normal,	11	7
Slight chronic fibrous thyroiditis,	16	5
Marked chronic fibrous thyroiditis,	11	0
Chronic interstitial thyroiditis (mononuclear cell deposits),	1	0
Epithelial infolding,	18	7
Colloid excess, follicular,	8	1
Colloid excess, interstitial,	8	1
Exophthalmic goiter,	1	0

THE RELATION OF THYROID TO RECORDED PULSE-RATES IN CERTAIN CASES.

	Number of cases.	Pulse 61-70. (7 cases.)	Pulse 71-80. (7 cases.)	Pulse 81-90. (8 cases.)	Pulse 91-100. (4 cases.)	Pulse 100-120. (3 cases.)	Pulse 120-150. (2 cases.)
Normal,	8	2	2	2	2	0	0
Slight chronic fibrous thyroiditis,	11	2	2	2	2	1	2
Marked chronic fibrous thyroiditis,	7	2	2	2	0	0	1
Chronic interstitial thyroiditis (mononuclear cell),	1	1	0	0	0	0	0
Epithelial infoldings,	10	2	2	2	0	2	2
Colloid excess, follicular,	5	1	1	0	1	0	2
Colloid excess, interstitial,	6	1	1	1	0	1	2
Exophthalmic goiter,	1	0	0	0	0	0	1

SUMMARY AND CONCLUSIONS.

The favorable results of thyroid lobectomy (Berkley-Follis) in 5 out of 8 cases of katatonia rendered a histological examination of the thyroid gland in this and allied diseases desirable. This need was partially fulfilled by the work of Ramadier and Marchand, who found, in a study of the thyroid in 48 cases of mental disease, histological changes of some sort in over 80%. These French cases came from a goitrous region and the glands showed a great predominance of sclerotic changes (77%).

As a control for the French work, 50 Danvers cases have been examined. Excluding a case of exophthalmic goitre and a case of acromegaly, about 77% of the Danvers series show changes, but a far lower percentage of sclerotic changes (56%) than the French series. Since the milder degrees of sclerosis are hard to interpret, the percentages of more marked sclerosis are interesting: Ramadier and Marchand, 29%, Peabody, 23%.

A possible relation between the thyroid gland and the process of emaciation is seen in the fact that 64% of the subjects with "normal" thyroids (11) had become emaciated under hospital or other conditions, whereas none of the subjects with chronic thyroiditis (12) showed emaciation. Again only 13% of the subjects showing follicular

or interstitial excess of colloid had become emaciated, so that the question arises whether such histological "excess" means excess or means defect in thyroid constituents in the body at large.

Though the pulse had not been intensively studied clinically in these cases, certain data are available. None of the "normal" thyroids had been associated with pulse-rates over 100 (75% under 90). Only 1 of 7 cases of marked chronic thyroiditis yielded a pulse over 90 (but that one over 120). The exophthalmic goiter case naturally gave a high pulse; the acromegaly case a low one. The hyperplastic and excess-colloid cases, as well as those of slight chronic thyroiditis, are variously distributed with respect to pulse.

Five descriptions of thyroid glands in dementia precox are added; three of these yielded both microscopic and macroscopic alterations (one enlarged, two small), which may or may not signify important alterations in the amount of thyroid products reaching the circulation. Two cases of briefer duration showed neither microscopic nor macroscopic alterations.

The absence of emaciation in chronic thyroiditis, unless accidental in this series, forms a problem in which the parallel study of the pituitary body and other glands would be of aid.

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VII.

INCIDENCE OF HEART DISEASE IN ACUTE PSYCHOSES, DANVERS STATE HOSPITAL, 1879-1909.

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This study of the incidence of heart lesions in acute psychoses at the Danvers State Hospital is based upon the protocols of cases autopsied at the Danvers State Hospital over a period of thirty years, namely, from 1879 to 1909. The