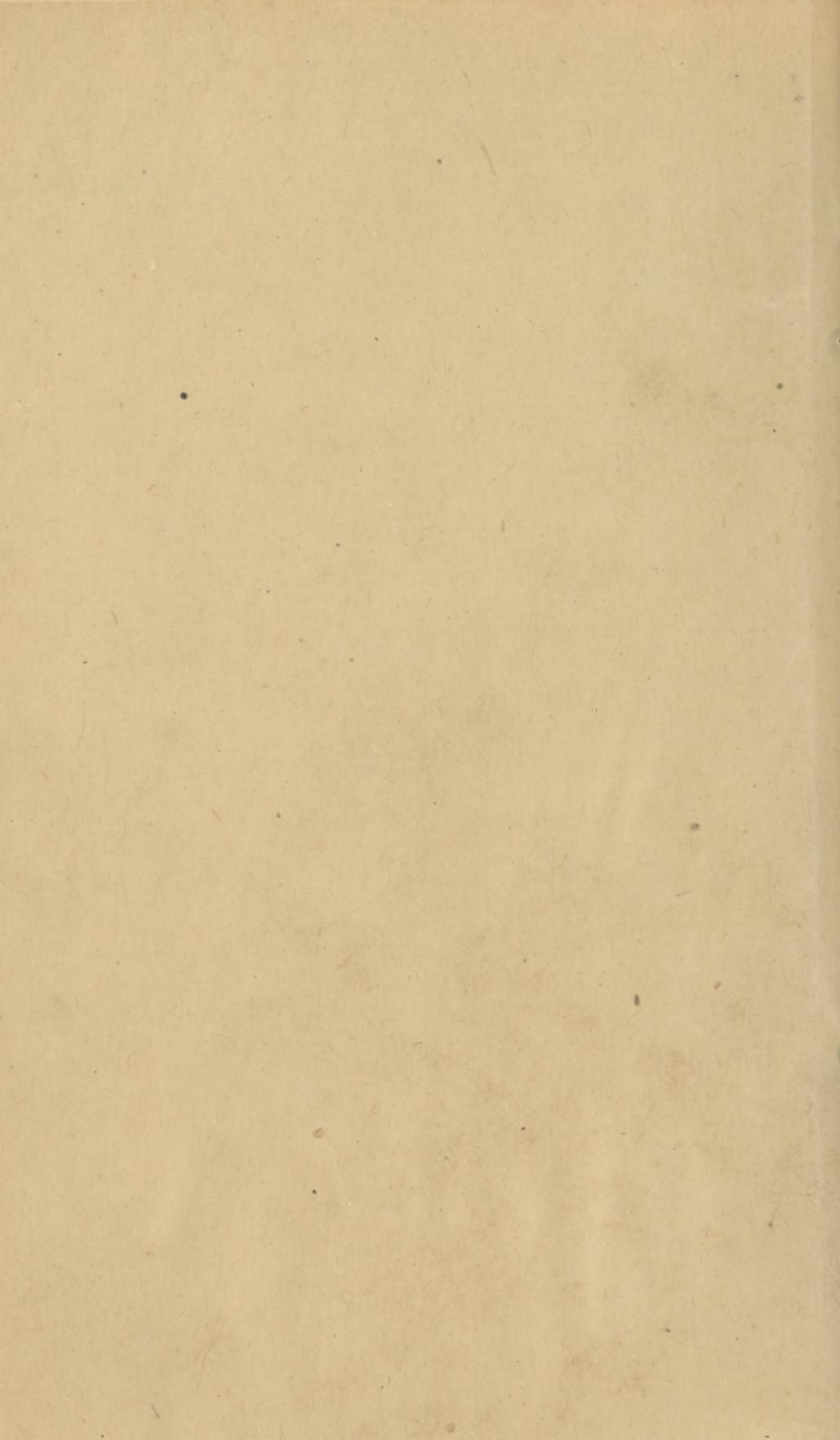


Peters (J.C.)

Albuminoid degeneration

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Peters. (J.C.)

adization, galvanization of the sympathetic and pneumogastric, and central galvanization.

I have no experience in the use of electricity in dyspepsia, but I can well conceive that in what is sometimes called nervous dyspepsia (*i. e.*, when the secretions which accomplish digestion are deficient in quantity and depraved in character in consequence of impaired innervation) electricity might be of great service.

ART. II.—*Albuminoid Degeneration or Infiltration.* By JOHN C. PETERS, M. D., President of the Medical Society of the County of New York, and of the New York Neurological Society, etc. New York City.

These are names which are now frequently applied to the so-called waxy or lardaceous disease, and to amyloid degeneration.

Any part or structure may be affected, and usually several organs are involved. The liver, spleen, kidneys and absorbent glands are most liable to it, but it may attack the stomach, bowels, suprarenal capsules, muscles, brain and cord and their membranes, the tonsils, serous membranes and bladder. It may also affect morbid deposits in connection with inflammation, tubercle, cancer, &c.

The minute arteries and capillaries of these parts are almost always first affected, and the infiltration begins in their muscular coat. Their walls become thickened, their channels narrowed, and on section the vessels remain open, and at the same time assume a compact, translucent appearance, looking like silver cords or threads. Next some of this peculiar substance makes its way directly through the walls of the capillaries into the tissues around, extending into the cells and intercellular tissues, enlarging the former and making them more spherical, destroying their nuclei and displacing their normal contents. These then coalesce, and the whole structure finally presents a peculiar glistening appearance. In short, the disease consists in the infiltration of a material without cells or nuclei, which, of course, appears quite structureless and homogeneous, and at first nearly transparent. The organ affected becomes enlarged, sometimes to a great degree, but without any irregularity in form—

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the surface being quite smooth and the margins apt to be rounded; its weight is increased, the specific gravity high, and the whole feels heavy and solid. It may be cut into regular, quite smooth pieces, or even, very thin slices, with sharp, firm margins. The cut surface is dryish, paler than normal, and presents a glistening, quite translucent aspect, being quite smooth, uniform and compact, except when the infiltration is slight or limited to the capillaries, or to certain spots, as is well seen in the so-called sago-spleen, where it is confined to the Malpighian corpuscles. It may also be broken or torn into pieces—its consistence being peculiar, resembling in toughness, resistance and elasticity somewhat that of wax, or of wax and lard combined; hence the names waxy and lardaceous.

It is detected by peculiar chemical reactions; for when a watery solution of iodine is applied, a deep, reddish brown color is produced, and the subsequent addition of a drop of strong sulphuric acid gives rise to a violet or dark blue color. These reactions are rather those of some form of starch or cellulose, and the disease has been called *amyloid* by some; but the view now most commonly adopted is that it is an albuminoid substance, its ultimate analysis showing that it is either a nitrogenous compound, or else a substance deposited in a nitrogenous tissue from which it cannot be separated. Dr. Dickenson supposes it to be a de-alkalized fibrin, or a fibrin which is deprived of its alkali and then deposited in a crude form; and most pathologists agree that it is a direct deposit from the blood, in consequence of some alteration of this fluid. But as this peculiar albuminoid substance has never been detected chemically in the blood, others suppose that it is modified after it escapes from the vessels, or that it is derived from some local degeneration or metamorphosis of albumen, after it has left the capillaries. This latter view is not held in high esteem.

It is almost invariably, but not always, preceded by some disease, which, in the great majority of instances, is attended with long-continued and excessive suppuration, in which it is supposed that the fibrin of the blood becomes imperfect and is poured out as such. It is common in caries and necrosis of the bones, and in lumbar abscess; in chronic pulmonary phthisis, with much purulent expectoration; in chronic empyema; in py-

elitis or other kidney affections; in extensive ulceration of the bowels, and in prolonged ague and tedious malarial influence. It is also seen after syphilis, especially when attended with much suppuration and disease of the bones; and when it follows these, it often begins in the neighboring lymphatic glands, which fact is considered by some as an argument in favor of its local origin in degeneration.

Nutrition is impaired, and the patient is often extremely emaciated, becoming also pale and anæmic, with a peculiar transparency of tissues, or presenting a sallow, waxy look. There may be great debility, with a tendency to syncope, and œdema of the legs may occur from weakness and anæmia.

The treatment is to check suppuration with the mineral acids, tannin, &c. The syrup of the iodide of iron is said to be almost certainly, or at least often attended with considerable benefit if persevered in for some time.

The above is the simplest view of this disease, taken mainly from Roberts' *Theory and Practice of Medicine*. Others compare the infiltration to cerebrin, lecithin and other normal substances of the brain and spinal cord, which are remarkable for their property of swelling up in hot water into a substance resembling starch. Lecithin resembles wax, may be easily melted, and gelatinizes in warm water like cerebrin. But Frey says there appear to be various kinds of lecithin, thus: 1st. *Protogon* is simply a mixture of cerebrin and lecithin; 2d. *Myelin* is a substance of peculiar microscopic appearance, occurring in different parts of the body, especially in those undergoing decomposition; it is tinged slightly brown by iodine, while in concentrated sulphuric acid it becomes of a red, or, at times, violet color. Myelin resembles cerebrin and lecithin in its swelling up into a gelatinous mass in hot water; but it may also be obtained from a mixture of oleic acid and ammonia. *Amyloid* matter is another allied substance, which Frey thinks is a mixed product of the degeneration of many, especially of the glandular portions of the body, causing the so-called waxy or lardy degeneration, and which is colored of a peculiarly reddish brown, or brownish violet hue, by a solution of iodine, and which usually turns to violet on the subsequent addition of concentrated sulphuric acid, or more rarely to blue. Finally, thirdly, the *cor-*

pora amylacea of the brain, which vary in their reactions, becoming violet under the action of iodine and sulphuric acid, but frequently blue or blueish with iodine alone; thus resembling starch in one respect and cellulose in another, although not absolutely composed of either. The corpora amylacea are found in the nervous centres of putrefying corpses, in quantity increasing with the advance of putrefaction. They are also met with of considerable size in the prostate gland and the sustentacular connective tissue of the brain and spinal cord may contain them in abundance. Hence some pathologists think that amyloid degeneration arises from the incomplete conversion of starch into sugar and lactic acid.

Other pathologists think that we must look for the origin of albuminoid or amyloid degeneration in some imperfect formation of fibrin, which is a derivative of albumen, and into which it can be resolved by solutions of various alkaline salts, especially the nitrates and carbonates of potash. According to A. Schmidt, *no fluid fibrin* exists at all in the animal fluids as long as they are in motion. It is first generated in the blood and other liquids by the chemical combination of two nearly related compounds, named fibrinogen and fibrino-plastin. The first, also called *metaglobulin*, is dissolved in the plasma of the blood; the second, or *paraglobulin*, which, combining with fibrinogen, converts it into fibrin, exists, on the contrary, in the bodies of the red blood cells, or passes from these into the plasma. Now lymph, chyle, pus, and many tissues containing cells, and also fluids into which these cell-contents have passed, viz.: the serum of the blood, synovia, saliva, &c., are all *fibrino-plastic*; while fibrinogen is also widely distributed through the system, so that it is found in almost all the serous fluids, as well as in those saturating the connective tissue and muscles.

Both of them may be precipitated from dilute solutions by conducting a stream of carbonic acid through them; but both are kept from uniting so as to form fibrin by the rapid mutation of matter which takes place in the moving juices of the body; but on the chemical combination of these two mother-substances, in order to form coagulated fibrin, the alkalies, which previously held them in solution, are set free.

This brings us closely to Dr. Dickinson's theory of de-alka-

lized fibrin as the basis of amyloid degeneration. He found, in tissues affected with it, that the proportion of alkaline salts, as determined in the ash left by incineration, was remarkably diminished, even to the extent of 25 per cent.; while the proportion of lime was somewhat increased. He also found that the affected parts had lost the natural faint alkaline reaction of healthy tissues, and were either neutral or even acid, so as no longer to discharge the color of indigo-solution, but to become stained by it, and thus be as clearly recognized by it as by the iodine reaction. Finally, by treating fibrin with acids, he produced a substance somewhat resembling amyloid material in its reaction, with iodine. But a committee of the London Pathological Society found that livers affected with this degeneration were deficient only in potassium and phosphoric acid, while they furnished an excess of sodium and chlorine. They also found a large proportion of cholesterin, and a generally increased proportion of fat. Jones and Sieveking finally say we do not know in how far the deficiency of alkaline salts is peculiar to the state of waxy degeneration, or whether it does not also occur in other anæmic conditions of the tissues. Still phosphoric acid and potash may be used in addition to tonics and iron, and the iodide of iron, in the treatment of the disease.

ART. III.—*Case of Persistent Priapism, with Remarks.* By M. M. WALKER, M. D., Physician to the Virginia State Prison. (Read before the Richmond Academy of Medicine, December 5th, 1876).

H. Odeneal, negro convict, appeared at sick call July 14th, 1876, holding the penis with both hands, which, if let go, assumed almost a perpendicular position, and was found, upon examination, to be hard, erect, painful and fully distended, except the glands, which did not seem to sympathize with the rest of the organ, but which was in an almost wrinkled condition. He stated that he waked up about the middle of the night, of July 12th, in that condition, and thought he had been dreaming, but did not remember the purport of his dreams. The next day, he used cold water freely, hoping and expecting the penis to subside. The patient was twenty-six years old, of medium height and strong muscular development. He was sentenced by the Pittsylvania County Court, to eighteen years confinement, for the mur-

