

SYNOPSIS.

In the summer of 1854, while treating a case of phthisis pulmonalis, in the incipient stage, I had my attention attracted by one symptom, or feature, of it, which interested me deeply, and which has proved to be the foundation of two series of what I regard as important discoveries in pathological science, that I have since made. This symptom, or feature, of the case, was as follows: The patient, a lady of 33 years, who had, for the most part, a dry hacking cough, with chronic sore throat and irritability of the lungs, would occasionally have severe paroxysms of coughing, and expectorate thereby, a transparent gelatinous mass, sometimes as large as a medium sized marble, though irregular in form, and of sufficient consistence to maintain its shape wholly, or in part, for some little time after it was expectorated, and would then flatten down upon the surface on which it was placed. In case of failing to raise this, the patient stated that she would have a continued sensation "here," placing her hand over the bifurcation of the trachea, as though there was something lodged there that she wished to detach and eject. This would excite considerable more cough than it was common for her to have, when, finally, though sometimes not until after several days, she would detach and expectorate a mass of the size of a small pea, or less,

of cheesy-looking substance, bearing every appearance of crude tubercle, and this would terminate the increased irritation that its presence there created. The expectoration of the transparent mass, or failing in this, the increased irritation in the trachea, and final ejection of the substance resembling crude tubercle, which always terminated the additional cough, constituted a marked feature of her case until many of the other symptoms had nearly disappeared, in the progress of her cure.

Reasoning upon these facts, in the connection here presented, I naturally assumed a relation between the transparent masses named, and the more hardened ejected pellets. I concluded that the former, the transparent masses, must be the blastema of tubercle, within and from which the tuberculous corpuscles were organized, and that the latter or hardened pellets, were aggregations of tuberculous corpuscles, comprising the residue of the former, after the supposed organic change, and the removal, by evaporation or absorption, one or both—lying as the masses did in contact with the inner and free surface of the trachea—of the water which constituted so large a portion of the entire bulk of the original mass.

A starting point thus once obtained, I pursued the investigation carefully, through the succeeding five years, in every case of phthisis proper, and catarrh so-called, that I came in contact with, until I met with so many similar cases which furnished repetitions and confirmations of the above order of facts, that I embodied the conclusions at which I had then arrived, namely, that all tuberculous deposits were the result of a perverted secretion of the mucous membranes, arising in consequence of an irritation and abrasion of their free surfaces, in a pamphlet entitled, "Phthisis Pulmonalis, or Consumption shown to be the

result of a perverted secretion of the mucous membranes, and its cure established by Homœopathic remedies, under the law of 'Similia Similibus Curanter.'" This pamphlet was published in 1859, and with it the profession have become somewhat familiar. It embraced much more, it is true, than above indicated; as for instance, the announcement of my discovery, that boils and carbuncles are the result of tuberculous deposits in the cellular tissue of the muscular system; and the further announcement of my discovery of the law of *metastasis*, besides other original matter which need not be mentioned here; in short, it compassed my first series of discoveries in the great field of tuberculous diseases.

After the publication of the pamphlet, I pursued a systematic course of observations upon all the other mucous membranes, no less than upon that of the air passages, to ascertain if they all alike furnished the perverted secretion in question. True, it was implied in that treatise, that they did, but this position was taken, more from a knowledge that the anatomical structure of all mucous membranes was alike, that their physiological functions were similar, and that like action, upon like animal tissues, must result similarly, and also from a few cases actually seen, than it was from any extended series of observations I had then made. Now, however, I have had such observations, and they have fully confirmed what I then partially assumed, and have furnished cases, by which the fact has been established by the most positive proof, that *all* the mucous membranes, except that of the liver—and this by analogy—pour out from their free surfaces, when these are abraded, the transparent gelatinous mass, or what I then termed primitive tuberculous matter. And furthermore, that where this was thrown off in any con-

siderable quantity by *any* of the mucous membranes, there were always more or less marked symptoms of tuberculosis, or some one of its kindred maladies, attending such discharge.

The next points to settle, were the chemical and physiological characters of this perverted secretion. Its pathological nature I thought I had already settled, as above shown. Well, in the course of a year or more spent upon this subject, in research and comparison, I settled the fact conclusively in my own mind, in the year 1861, that such secretion, as well as all abnormal secretions of mucus, or other outpourings from *any* of the mucous membranes, which result from an irritation or abrasion of the free surfaces thereof, are *always* either pure ALBUMEN, or *albuminous* in character; that the albumen so discharged, comes directly from that which should be held in the fluid percolating the interstices of the tissues, composing those membranes; and that its ultimate, and *only* source, is in the blood.

The point being settled, then, that the perverted secretion, which I made the basis of tubercle, in the pamphlet, was none other than albumen, or, at least, albuminous in character, it was clear, of course, that this secretion was not, itself, primitive tubercle, or nascent tuberculous matter, nor, indeed, the pabulum of tubercle, in any proper sense of the term, as I had claimed. Since, from all that we now know, it would be impossible for corpuscular bodies, or other organic structures, to be developed within, and from, albumen, lying upon the free surface of any membrane, as tissues have been supposed to be developed, each out of its own peculiar blastema. Though if the transparent, gelatinous outpourings in question had been the blastema of tubercle, as I then supposed, it was clear

that tuberculous corpuscles would organize in and from them; and herein is exposed an error I committed, in assuming so direct a connection between the two, and which, in its appropriate place, I shall fully correct. But, that such transparent secretion, or as I now know more definitely, the loss of albumen, was in some way the cause of tuberculous diseases, was confirmed to me in every case I met, and by subsequent research, I ascertained how it acted as such cause, as we shall soon see.

The manner in which this loss of albumen is sustained, I found to be as follows: In the first place, the mucous membranes—for they all act alike in this respect—*always* secrete more or less albumen, along with the mucus secretions, when they are under simple irritation or inflammation, and when either or both of these conditions have progressed to that point, whence results an abrasion of their free surfaces, or in other words, when these surfaces have been stripped of their epithelial covering, the interstices in the membrane are uncapped, or opened, and the albumen, that naturally exists therein, flows out, and is carried away, incorporated or not, as the case may be, with other unnatural, or with the natural discharges, from the organ in which it takes place. The continued presence of successive portions of albumen, in those interstitial spaces being necessarily required there for nutritious purposes, more of it is poured out into them from the blood, and mostly wasted—nutrition would undoubtedly seize upon some of it as it was passing through—in like manner to the preceding, and this succeeded by more, which is lost, and so on, until the abrasion is healed, or death terminates the case.

Here, then, it will be seen, we have a rational basis for the pathology of Bright's disease of the kidneys, always

hitherto in doubt. It explains, clearly, the manner in which albumen escapes from the blood through the mucous membrane, into the uriniferous tubules, in this disease, where it is dissolved and washed away in the urine, when we have what is called albuminuria. And as all the other mucous membranes lose albumen in a similar manner, that is, as a result of irritation, inflammation and abrasion — either and all — of their free surfaces, all such diseases of these, are more or less kindred to Bright's disease of the kidneys. For instance, phthisis pulmonalis, in all its catarrhal symptoms, from the commencement to the close of the disease, is kindred to Bright's disease, in this respect, namely, that the mucous lining of the bronchial tubes, in consequence of the irritation, inflammation, or abrasion of its free surface — these conditions of that membrane always existing in all stages of phthisis — loses or wastes albumen from the blood, the same that the similar lining of the uriniferous tubules does in albuminuria. That is, the albumen, in such cases, is *secreted* by the irritated or inflamed portions of the membrane, and *leaked* through those parts of it abraded of its epithelium, into the bronchial tubes, when it is coughed up, mingled more or less with other expectorated matters, and there found by its chemical tests, and always in abundance, in viscid, thick and adhesive expectoration. And I repeat, *the loss of albumen goes on in phthisis, in this way, in greater or less proportion, from the very first catarrhal discharge from the nostrils, or any of the other passages lined with mucous membrane, which show chronic disturbance in the incipient stage of the malady, all the way through the different stages to the close of life, only the greater the amount of mucus discharge from the lungs, and the greater the quantity of other mucus discharges*

in any stage, the greater will be the loss of albumen. Finally, all the other chronic, and all the acute diseases, which have their primary seat upon any of the mucous membranes, or irritate or abrade these in their course, waste albumen from the blood, and in this respect, may be said to be kindred to albuminuria.

The fact once established in my mind, then, that the transparent gelatinous secretion, spoken of in my pamphlet, and to which reference is here made, was albuminous in character, and that all the albumen lost through the mucous membranes, in the ways above described, diminished the amount of this constituent of the blood, by so much, marked the commencement of a second series of discoveries that I have made, which is far more important than the first, and opened a field for pathological research, that bids fair to be at least equal, if not greatly superior, to any other that has ever hitherto engaged the attention of the profession. It was clear to me that that proportion among the constituents of the blood, which Nature had caused to be produced, and hence necessarily required in order to make it a nutritious fluid, was destroyed by such loss, and that the remaining constituents, namely, water, blood-corpuscles, hæmatin, fibrin, fatty matters, salts, and extractive matters, would each be left relatively in excess, in the circulation, in the ratio they must bear to each other, and to albumen, in perfect blood. To make this point more clear, I here insert the following table of the proportions of the principal constituents of the blood, in 1000 parts, taken from the most accredited authorities:

Albumen,	70.00
Water,	403.00
Blood-corpuscles,	512.00
Fibrin,	2.20
Fatty matters,	1.30
Salts,	6.03
Extractive matters,	5.47—1000.00

The proportion of the blood-corpuscles, here given, is not that of their dried residue, of course, as they are generally rendered in the books, but represents the gross amount of them in the circulation, in their *natural* state, holding within their cell walls the requisite quantity of water to enable them to suitably perform their functions; and in them, it must not be forgotten, is included all the hæmatin, or coloring matter of the blood, which is 7.5 parts in 1000 parts of blood.

According to this table, then, if one ounce of albumen is lost from the blood, we have above 13 ounces of the other constituents, collectively, left in a relative excess in the circulation; or in other words, there would be wrought, in this way, a complete destruction of over 14 ounces of blood—including the ounce of albumen—for any and all purposes of normal nutrition; and yet this is a view of this subject, which appears never before to have been taken. To go into details we find the following: The loss of one ounce of albumen, would leave a relative excess in the circulation of nearly 6 ounces of the water of the serum, over 7 ounces of blood-corpuscles, 15 grains of fibrin, nearly 9 grains of fatty matters, over 41 grains of salts, and above 37 grains of extractive matters.

That none of this excess of any of these constituents, can be used in normal nutrition, and hence that all of such excess is now foreign matter, in the blood, was equally as clear to me as that the loss of any portion of any one of them, would destroy that proportion among them all, which Nature, with so much care, had established—though that some of them are employed in abnormal nutrition I soon learned. Then if their excess cannot be used, it must be cast out of the circulation, for with a continual daily supply of all of them, albumen included,

to the blood, by digestion, in the proper relative proportion of each, with a portion of the latter being daily lost, and none of the excess of the remaining ones consumed in nutrition, it can be plainly seen that, if not expelled, so great an accumulation of these would soon take place, that the whole circulatory system would be distended to the extent of rupture, and death speedily ensue. Instead of matters proceeding to this extremity, however, I shall be able to show that such excess, is generally expelled from the blood vessels, by secretion, etc., through every avenue of escape which Nature can command, thus avoiding what would otherwise necessarily result in a much earlier fatal termination.

The manner in which the surplus portions of those constituents named as left in excess, is deposited within, or ejected from the system, and the varied and remarkable symptoms and diseases of which they are the cause, when so deposited, or while being expelled, I here give in brief, to indicate something of the character of my second series of discoveries, as these, together with their proofs, will be exhibited in my forthcoming work. For instance, I feel competent to demonstrate that, the "night-sweats" of consumption and other kindred diseases, and the dropsical effusions of these, when they occur, and also of Bright's disease of the kidneys, are all the result of the excess of water, left in the blood by loss of albumen, which water Nature throws off in these several ways, to get it out of the circulation; that all tuberculous corpuscles, so-called, are nothing more nor less than the excess of blood-corpuscles, left by loss of albumen, these being decolorized, by a special process, and through this and other agencies changed into tuberculous corpuscles, as we shall soon see; that the petechial or purpural spots of malignant diseases

and that ephelides or freckles, and other discolorations of the cutaneous surface, arising from diseased action, come from the hæmatin, which is released from the surplus corpuscles, and then deposited in the skin; that fibrous tumors, abnormal adhesions, etc., arise from an excess of fibrin in the blood; that fatty deposits, fatty tumors, and the like, come from an excess of fatty matters, in consequence of a loss of albumen; that calculus concretions or deposits, whether about the joints, or in the cavities or passages of internal organs, and also lithiasis or gravel, come from an excess of the salts left in the blood by the same cause; and, lastly, that many morbid growths and tumors, besides fibrous and fatty tumors, may arise from the matter which nourishes them being left in excess, in the blood, by a loss of albumen.

Or to descend more into detail, we find the following, taking the constituents of the blood, in the order just named in the table, passing over albumen, of course, as the one constituent which is lost. The *water* of the serum, then, first presents for consideration. The loss of one ounce of albumen, leaves, as we have just seen, nearly 6 ounces of water in excess, which reduces the specific gravity of the serum, makes the blood more watery as it is called, that is, leaves a relative excess of water in the circulation in comparison with the coagulable matter remaining therein, after the loss of albumen has been sustained. The reduction of the specific gravity of the serum, necessarily excites the law of *endosmosis* to greater activity than is natural, throughout the whole capillary system, by which the excess of water, or at least, a greater portion than in health, of the now less dense serum, is, generally, first expelled through the walls of the superficial capillaries into the interstitial spaces of tissues out-

side of those vessels, and from these spaces, through the same, or other agencies, this water is next removed, in the majority of such cases, through external or internal surfaces, to get rid of it from among the living tissues, or from the system entire, as the case may be. The results of such expulsion are various. In the first instance, the excess of water is thrown off by increased secretions of urine, causing what is sometimes called diabetes insipidus, or through the skin in increased daily perspiration; or through both the skin and the kidneys, as the forces impelling it may direct. When the system fails to accomplish the expulsion of this excess of water, by these means, the patient next suffers from "night-sweats" — which are thus shown to be beneficial, under the circumstances, rather than injurious—and sometimes from watery diarrhoea. And, lastly, when Nature finally fails in all these efforts at self-preservation, we then find this water accumulating in the cellular tissue of the muscular system, there causing anasarca or general dropsy, or it is poured out into some of the serous cavities, causing ascites, hydrothorax, hydropericardium, or hydrocephalus, according to the cavity into which it is excreted. Of course there is not, and cannot be, an entire uniformity in these several results, in all persons' systems, suffering from a loss of albumen, any more than there is an identity of all the several cases of any other class of diseases, in all individuals. Again, according to my observations, it is only in a small minority of the cases, that *all* the surplus water is expelled from the vessels, as fast as it is brought into excess, for in the great majority of such cases, a small portion of it, at least, seems to be retained, thus causing the blood to be too watery, during all the time the waste of albumen is going on. That portion of the excess of water retained, is, generally,

more marked in Bright's disease, than in any other derangement where albumen is lost, for the reason that in this malady the kidneys are so much diseased as to interfere with, or so far interrupt the excretion of water by them, that not near as much of this is thrown off by urination as naturally should be, which of itself would be the means of too much water being retained in the blood, even if there was no discharge of albumen. But when we come to add to this, the relative excess of water left by such discharge, none of which is or can be ejected through the kidneys, in many such cases, we have much more serious results than could otherwise occur, and among these are the early dropsical effusions which are so common in albuminuria and so alarming to both the patient and physician, and which would not arise so soon, but for this fact.

Next in order occur the *blood-corpuscles*. These, like all other cells, endowed with vital activity, have a definite period of existence; therefore new ones are constantly being produced, within the system, to supply the place of those that are as constantly undergoing natural decay. The language of Virchow is explicit in regard to these facts. He says: "But we are also all agreed upon this point, that the blood is one of those changeable constituents of the body, whose cellular elements possess no durability, and with regard to which everybody assumes that they perish, and are replaced by new ones, which in their turn are doomed to annihilation." Of course, production and decay of the blood-corpuscles must keep exact pace with each other, in healthy blood, to ensure the continued presence, at all times, of the proper proportion of corpuscles, or cells, to the other constituents. On the contrary, in diseased action, the loss of one ounce of albumen, as I have before stated, would leave above 7 ounces of

blood-corpuscles in excess in the blood vessels; and I propose to demonstrate, in my forthcoming publication, that a great portion of this excess of blood-corpuscles, becomes tuberculous corpuscles, and that tuberculous corpuscles, proper, have *no other origin but this*; while those of the excess of blood-corpuscles, not changed to tuberculous corpuscles, are entirely broken down and cast out of the system.

True, the blood-corpuscles, or all but a *very* small portion of them, are red, while the tuberculous corpuscles are yellowish white—facts of which no one is more thoroughly aware than myself, as the labor and research which the discovery of the change of the former into the latter cost me fully demonstrates.

That I have not failed to give this branch of my subject due consideration, the few following facts, furnished here, from the great number which I have accumulated for my work, will indicate. While the specific gravity of the serum is reduced by the loss therefrom of albumen, and this excites to increased activity the law of endosmosis upon the capillaries, directing the greater part of the surplus water *outwardly*, through the walls of these, with the results I have named, when speaking of the disposal of the excess of water, this law, at the same time, and from the same cause, is *necessarily* excited to action upon the corpuscles, directing a portion of the excess of water *inwardly*, through the enveloping membrane of these little bodies—their contents being essentially of the same specific gravity as that of the serum in the natural state of each; therefore when the specific gravity of the latter is reduced, and while the contents of the former remain nearer the natural density, a portion of the excess of water, under the direction of endosmosis, *must* pass through