CASE OF BRONZED-SKIN CACHEXIA, WITH CON- GENITAL ABSENCE OF THE SUPRA- RENAL CAPSULES.

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ABOUT a year and a half ago, I sent to the BRITISH MEDICAL JOURNAL an account of a fatal case of bronzed skin cachexia, in which a *post mortem* examination discovered a total disorganisation of the suprarenal capsules. I have now to relate a case of the same cachexia, also proving fatal, and in which the autopsy showed the suprarenal capsules to have been entirely absent.

On the 1st of April last, an elderly female sought my advice about the state of her health. She was 53 years of age, very masculine in her physiognomy and general appearance, and had been for some years the housekeeper in a clergyman's family. Her story was almost *verbatim et literatim* the story of all persons who are afflicted with the bronzed skin disease. She had been for some time "out of health"—ailing—suffering from something difficult to define, and out of the category of ordinary nosologies. She looked very pale, the pallor having that dark earthy tint which is ordinarily associated with the existence of malignant disease. When she sat down, she stooped forward like a very aged person, from physical inability to sustain herself upright; and her lassitude and exhaustion appeared to be extreme. No pain was complained of, but she had lately suffered from diarrhoea, although this was not of sufficiently long continuance, nor of sufficient severity, to explain the aggravated spanæmia. Her health, until two months previously, had always been good; and she had apparently been one of those persons who, by "never having known a day's illness", are said by a great humourist to miss one of the finest disciplines of life.

Most of us are probably now pretty vigilant in the detection of bronzed skin disease. There was much *primâ facie* evidence that the present case was an illustration of this cachexia; but it was a guess rather than a diagnosis. Whatever may have been the primary cause, I had to deal with an orderly sequence of phenomena, which proximately depended on a special crisis; and there was no practical use in going further back in the chain of causation than could be positively verified.

The treatment was simple enough, and consisted, in the main, of meeting and counteracting the most obvious symptoms. Diarrhoea and restlessness were alleviated by opium; but the most signal failure attended a persevering attempt to remedy the characteristic spanæmia. The administration of iron, in various forms and in heroic doses, did not arrest the disease, and perhaps did not postpone by a single hour the fatal end.

The *post mortem* examination revealed the entire absence of the suprarenal capsules. The kidneys were healthy; but there was a remarkably anæmic condition of the whole mucous membrane of the alimentary canal—a point to which attention was first directed by Dr. Simpson. Black pigment was accumulated to a considerable extent in the mesenteric and bronchial glands. The latter were so swollen with pigment that they appeared like tough inky tumours, thus literally realising Rokitsansky's words (vol. iv, p. 393, Syd. Soc. edit.). Black pigment was also noticed in the parenchyma of the lungs. The other thoracic and abdominal organs were healthy. The cavity of the head was not examined. The tegumentary discoloration was tolerably uniform, and had a metallic shining character by reflected light. Over the flexures of the great joints, the dark tinge was much increased.

REMARKS. An authentic record of every case of bronzed skin cachexia will assuredly help to evolve the etiology and rational pathology of that disease. At present, we must usually be content to do little more than offer a simple historic outline of the actual phenomena; but from patient observation and research will be gained the materials for future generalisation. Although our method of connecting the details may exhibit imperfect knowledge, yet Dr. Laycock's conclusion will probably command assent, that deposit of pigment, with symptoms of anæmia, indicates, at least, a chronic morbid state of the blood and of the blood-glands. Our existing evidence certainly seems to point to some grave error in the blood-forming processes, as constituting the essence of the disease; though it is difficult to understand why the suprarenal capsules should so often be the exclusive seat of morbid change.

Dr. Aitken has made the important practical remark, that we should discover the early symptoms of the cachexia, independently of bronzing of the skin; because, when the latter has been established, a sign of disease has been manifested which generally denotes the inutility of medical art.*

PHTHISIS: ITS ORIGIN AND ARREST.

By W. H. ROSS, M.D.

WHAT is phthisis? This query, though brief, still remains to be answered. Its causes, its victims, its terrors, and its palliation, have indeed been "treated" of in many a stately volume; but a plain and intelligible solution has hitherto been denied us, apparently because it was never looked for. Pathologists and physicians seem rather to have been anxious to adduce proofs of their industry and research, than to attempt a reconciliation of isolated but observed facts; hence they have wasted their energy in the analysis of tubercle, and frittered their time in the discussion of lung-sounds, and other morbid phenomena. Forgetting that in simplicity must reside the elements of power; that there is thus majesty in an atom, and creative force in a cell; that truth to be triumphant must ever be consistent; and that the Maker of all things creates his works by simple, and not by complex or labyrinthine processes. They have but too often grasped at effects, and ignored the guilt of a cause; and by thus seeking a cure in the mere lopping of branches, have exhausted the tree, and left the offending root untouched.

In the present paper, at the risk of being deemed presumptuous, I would venture to suggest that the true cause of consumption is malassimilation; that the liver is the organ primarily at fault; that that viscus, as the coiner of digestive blood, is oppressed by the character of the chyle brought to it; and that excesses of nutritious food in the delicate children of the rich—and of unwholesome and defective diet in those of the poor—are at the bottom of every case of this distressing complaint. With all humility, I conceive, that the blood thus made out of the products of imperfect digestion, scarcely contains within it that degree of elaboration, which, in the hepatic vein, will allow of its excretory principles passing off by the lungs as carbonic acid and water; that the lungs only discharge their proper functions towards the caval or systemic venous blood; and that being unable to convert the half-developed albuminoid elements of the blood, thus brought into the pulmonary circulation, into a fluid, suited to the due nutrition of the body, they mechanically permit the deposition of the same in their substance by exudation. On this hypothesis the most minute form of tubercle has its origin in disordered liver, while the lung tissues are chiefly infiltrated because they are the nearest excretory organs, and as such must be gradually choked by successive deposition. Presuming that the liver and diet do not change for the better, the deposited tubercle may go on increasing in size until it causes local irritation, when a process of softening will necessarily produce spasmodic cough, and a series of local though limited inflammations. That the tubercle should only be expelled from the lung by degenerating processes, is quite in accordance with natural laws, since the pulmonary lymphatics are neither numerous nor energetic; for if it be retained, it must become also encysted. But whilst tubercle is depositing, it is clear that the systemic arterial blood cannot receive its albumen and plasma from the food introduced from *without*, hence the absorbents are set to work to rob the system from *within* of all the elaborated fibrine which may be in excess, and ultimately even those structures which contain a good deal of albumen. Thus also the absorption of fat contributes largely to promote that wasted look, and painful degree of weakness and attenuation to be observed in the phthisical. A further degree of hepatic and gastric derangement may in the same way affect the sugar, which, according to Bernard, should be normally developed from the portal blood; but which in diabetes, not being able to escape as carbonic acid and water from the lungs, is passed over to the next excretory organ, the kidney, and thus appears in the urine, which is increased in sweetness and volume, the skin being rendered harsh and dry, and all the healthy fluid secretions sensibly diminished. It is precisely upon the same principle that mercury acts so injuriously when administered in the strumous diathesis. It

* In the "Glasgow Medical Journal" of July 1857, Dr. Martini of Florence relates a case of absence of the suprarenal capsules, without discoloration of the integuments.

then mischievously defibrinates the blood, by preventing the proper conversion of albumen into plasma, from the food introduced, and so, to meet the wants of the body, necessitates the abstraction of it from the glandular system, already feebly organised, as previously mentioned.

Do these views admit of proof? Can I show that the liver has been found in a so called state of fatty degeneration after the death of consumptive patients; that phthisical children have been generally of feeble and capricious appetite; and that their digestive powers have seldom triumphed over anything beside the very plainest diet, and only that when limited in quantity? I think I may affirm such to have been the case; less, perhaps, from my own experience, than from the writings of authorities, whose books are within the reach of all. Out of forty-nine cases of fatty or waxy liver observed by Louis, forty-seven occurred in consumptive patients. This is a startling fact; but still more curious is it, that it should have been noticed very frequently in connection with Bright's disease, because as the kidney and lungs cannot react on the liver, disease of the latter viscus would appear to be the exciting cause of their subsequent impairment. Be this as it may, the subject is well worthy of further investigation, though I may remark, *en passant*, that to ascribe the fatty liver to either the kidney or lung, is to assert that the caval blood can enter the portal system, which anatomists deny *in toto*!

Without here entering into the theories of the transmission of diseases, or of touching upon the scrofulous diathesis, (beyond agreeing with Erasmus Wilson, that it is due to syphilitic taint, recent or remote,) I cannot but think that phthisis is hereditary only in so far that a weak and delicate child being placed under many of the circumstances of food, clothing, pursuits, and air, as his progenitors have formerly been, is much more likely to succumb to certain dietetic influences from his delicacy of glandular organisation, than a stout healthy boy, who is properly and judiciously brought up, even if of a consumptive stock. Causes that depress the general health, must obviously interfere with the integrity of organic functions, but the intensity of their action must plainly be dependent on the natural constitutional and vital powers. Through want or necessity, the offspring of the poor can lay claim to no better birthright, than the privilege of struggling into manhood under adverse circumstances, and of arriving by instinct at a knowledge of what will shield them from the weather, and allay gastric emotions; but while their health deteriorates through rough usage, and through having to think so early of the cares and struggles indigenous to their position, the children of the wealthy arrive at a conclusion similarly painful, but from opposite causes. To say nothing of the amount of study and of hard labour on the mental treadmill of what is falsely called education, where everything is pumped in, and nothing drawn out or developed, the weak strumous child of the better classes, at an early age, is made to be the victim of parental affection. If he shows abilities, then are they forced to the utmost. If he is sickly, manifests an intolerance of ordinary food, or is afflicted with a pallid cheek, then is he driven into the parks, and ordered rude exercise; or it may be, is pampered and stuffed with stimulating meals, in the vain hope of making him strong. Becoming now a source of family anxiety, he is probably prescribed a course of shower baths, and cold douches, with the mineral and vegetable tonics, and of course unavailingly, until at length the stethoscope declares that the demon phthisis has laid siege to the lungs, and the worst fears are realised. Of course tubercle may remain harmless for years; but any exposure to what will produce pulmonary inflammation, as cold damp atmosphere, night dews, or raw chilly breezes; or what will affect the stomach or liver, as intense study, grief, dissipation, or the pleasures of the table—will obviously tend to softening of tubercle and further deposition. This is well seen in students of medicine, who are only too apt to rush from one extreme of brain work, into the opposite pitfall of pseudo-relaxation. When by chance, therefore, a child of the above character is sent to some stern old maiden aunt, living lonely in the country, or near the sea, he usually gets very little to eat, beyond broths and pure milk, and that but sparingly; and as a natural consequence of his stomach not being loaded, he recovers his digestion, and in time grows up to be strong and hearty, to be considered a phenomenon, and glorify the salubrity of his residence. Now it was from the study of a case like this, in my own family, that I was led to ascribe the origin of consumption to early indulgence and a weak stomach. Being profoundly impressed by Dr. Watson's lecture on chronic gastritis, and its rational treatment in the young, by William Hunter, I cannot but admit that many of

the disorders of childhood may be traced to injudicious over-feeding and oppression of the liver; and it has been to me a constant source of surprise, that physicians will still persist in giving tonics and bitters to provide an appetite in patients, when in reality their assimilative organs and food want attending to.

If we look at the physiology involved in the consideration of phthisis, we must perceive that in no way can the lungs have an increase in the amount of their proper duties, *because* the liver is disordered; neither can the liver do the work, which a diseased lung leaves unfinished. The lungs can only act in concert with the skin and kidneys, for they are compensatory organs. There is no viscus in the body, to act as substitute for the liver. If it should be inflamed, or congested, or impaired, reactionary effects must ensue, either on the structures to which it sends blood, or on those from which it receives it, and thus the lungs, kidneys, stomach, spleen, digestive canal, and portal radicals, be variously and progressively affected. Hence, in advanced disease of the lungs, a change of climate can only check the tendency to put on bronchitic or parenchymatous inflammation; and so, by means of a warm and dry atmosphere, readily promote skin action without arresting tubercular deposition. The influence of climate is really most curiously exaggerated; every benefit is attributed to the air, while changes of bad habits and of diet seem to be scarcely glanced at. In India, for instance, diseases of the liver are frequent, not, as I have heard gravely asserted, "because that organ has to put on increased action in order to do the work of the lungs, as a decarbonising agent," but because the European residents do habitually commit frightful excesses in the matter of heavy and highly spiced dinners, and import from England manners and customs, which, however suited to their mother land, are quite inapplicable to the tropics. Dr. Gordon boldly asserts, from his own experience there, "that the heavy breakfasts, hot tiffins, rich dinners, and grilled bones at supper, produce more cases of dyspepsia, fever, and dysentery, than all the beer, or brandy and water, against both of which we hear so much at home; and that it is not from either of the latter only, that so many invalids are annually sent away to the hills, to the Cape, and to England; but it is more frequently to late hours, gambling, and other species of debauchery, that rheumatic affections and worn out constitutions may be traced." Indeed we shall see, that the natives and Brahmins are by no means exempt from scrofula. Hot as is their climate, and free as is the skin action, they do not suffer from "liver" attack; but are much more frequently the subjects of pulmonary complaints. Living as they do almost exclusively upon rice and other vegetable productions, they are greatly amenable to debilitating influences; and were it not for their religious observance of cleanliness and attention to the bowels, the savage custom of bolting all their food at one meal would be very much more pernicious. On the other hand, few men enjoy better health than the colonial descendants of sober Dutch and English families at the Cape; and this, not because of the beautiful climate alone, admitting of so much exercise and open air enjoyment, but more especially because of their temperate lives, and moderation of view; and that this is so, is well seen in the contrast presented by the coloured population, who, having the means of living very cheap and abundant, and being, moreover, very idle and contemptuous of soap, are plagued by skin diseases, rheumatism, and ulcerated limbs.

From a consideration of these facts, I am naturally led to glance at the true office of the lungs and liver, and the part they play in the elaboration of the chyle. It is obvious, that although the lungs are the nearest to the heart, they only act simply by introducing oxygen into the pulmonary veins, and by removing carbonic acid and water through the bronchial tubes. They thus cannot elaborate, but by the law of the diffusion of gases act simply as scourers of the hepatic and systemic venous blood, and must depend on other organs for the production of those effete principles, which owe their expulsion from the body to respiratory efforts. The lungs are thus but a mere aggregation of air pipes, provided with machinery to admit of their being emptied and filled; and if they do get rusted occasionally, the character of the mucus is quite independent of their functional action, and must be removed by the power of self-reparation. Since, then, the lungs have no secreting gifts and no selecting ability, it follows that carbonic acid and water must exist as such in the mingled venous currents, in order to allow of their passing out through the trachea. If, however, in addition to these, the pulmonary arteries contain elements which are not excretory by the lungs,

and which also are not nutrient to the system, then if they are albuminoid, they would stop in the lungs, and form the basis of tubercle; while if they are crystalline, as urea or sugar, or the ingredients of biliary calculi, I see no difficulty in believing that they then would pass unchanged into the systemic circulation, and be excreted in the urine. In no other way can we satisfactorily account for the various urinary deposits consequent on particular indiscretions in diet; because oxalic, and benzoic acids are evidently not the results of animal chemistry; and in jaundice the skin is tinged, not by absorption of the bile by the portal radicals, (since those radicals could only take it back again to the liver,) but because the essential elements of bile, are not excreted by the liver from the chyle and splenic blood, and hence are allowed to collect in the arterial circulation and its ultimate ramifications. But, moreover, it is plain, that but a small quantity of injurious products can come from the food, if it be chiefly oleaginous, since the lacteals have the power of at once conveying fat and oil into the thoracic circulation without further assimilation, as shown by intunction and by nutrient enemata. And it is a well known fact, that when fat has been injected into the systemic veins, it has been absorbed; whereas albumen has been invariably rejected by the kidney, showing plainly that the latter is useless, even when pure, unless submitted to the chemistry of the liver. Now in what does this action of the liver consist? It cannot surely be believed that it merely produces bile, as the natural purgative—because the very existence of fixed oils in the bile shows that it must have been exerted, during the secretion of some nutritious principles out of those elements of the chyle which are unfit for venous or lacteal absorption. Adopting Liebig's theory of food being divisible into fuel and cell formative it still remains to be shown, how plain muscular fibre and starchy compounds, subsequent to their disintegration and digestion, by the teeth, saliva, gastric and pancreatic juice, can yet be made to emerge from the liver as sugar, fat, white corpuscles, etc. If bile be separated from the venous contents of the liver, and owe its colour and essential characteristics to the hypoxanthine and other products separated by the spleen from its arterial blood, while it is stored up in a distinct bladder, to prevent its injuriously getting into the hepatic vein—then the sugar must, on Bernhard's theory, result from the fat or the conversion of the albuminous elements into something allied to fat; and since glucose or grape sugar ($C^{12}H^{14}O^{14}$) can, under fermentative action, separate into 2 of alcohol ($H^6C^4O^2$); 2 of water; and 4 of C^2O^2 , or carbonic acid, it is but fair to assume that the alcohol is burnt off in the process. Such must be the case normally, and in health; but when fatty, and albuminous chyle is very much in excess, then the heat generated must no doubt be sufficient to excite inflammation and lesions, as is well known in India and other hot countries. Presuming, however, that either the gastric juice is deficient in quantity or quality, and the tone of the stomach destroyed by excess, or by stimulants, then seeing that absorption only commences near the pylorus, by so much the more is the labour of assimilation thrown upon the liver, and the generation and utilisation of fat there looked for.

It is no argument against these views to quote the opinions of Professor Bennett, who says that "one peculiarity of phthisis is, that an excess of acidity exists in the alimentary canal, whereby the albuminous elements of the food are rendered easily soluble, whilst the alkaline secretions of the saliva and of the pancreatic juice are more than neutralised, and rendered incapable either of transforming the carbonaceous constituents of vegetable food into oil, or of so preparing fatty matters introduced into the system as will render them easily assimilable;" for there is no difficulty in believing that every particle of fat made in the passage of food along the alimentary canal is at once absorbed into the system by the lacteals; and that, therefore, the liver has only to act on the residue, or contents of the portal vein, by converting them into sugar and oil. Indeed, the quotation just made refers to a consequence, and not the cause of phthisis; and, if pathologically correct, would rather militate against the administration of cod-liver oil, and indicate the use of starch and vegetables instead. The same eminent observer confesses, however, that "one of the great difficulties in the pathology of phthisis (as brought forward by him) consists in the fact that, whilst little fatty foods enters the economy by the primary digestion, and the adipose tissue of the body disappears, fat is apt to be stored up in certain organs, as the result of secondary deposition, especially in the liver. This fact, however, only proves", he goes on to say, "that the formation of fat by the secondary digestion, and as a

secretion of certain organs like the liver and female mamma, are excretory products, and, as such *per se*, are incapable of being reabsorbed, or of affording nutrition." Now, with all due deference, a conclusion like this is scarcely philosophical; for it seems plain enough that, if portal blood, when it has reached the liver, only undergoes a partial development, so that there is no grape-sugar formed, and hence no alcohol to be burnt off, then the fat, instead of passing on into the hepatic vein, remains deposited in the substance of the liver, and forms the fatty liver, as seen in consumptive children; while the partially assimilated albumen passes on to be deposited as tubercle. That sugar in itself is quite innutritious, would appear to be evident from experiments on the lower animals, the most marked effects being rapid emaciation; but this is evidently due to its being burnt off in the liver: and hence, in plethoric individuals, or in cases of fatty liver, the fat there deposited may, I conceive, be got rid of by confinement to a saccharine diet. In the same way, cirrhosis may be the effect of over-indulgence in spirits, with deficiency of nutrient food; because, as Dr. Wood points out, "the secretory epithelial cells of the lobules are excited by the alcohol into inordinate action; undergo, in consequence, excessive multiplication, and, not being washed away, like the analogous diseased cells in the kidneys, or by a current of watery fluid, necessarily accumulate in their tubules, and, by mutual compression, induce absorption and obliteration."

We owe it to Dr. Bennett of Edinburgh, that the curability of phthisis was first rendered possible. His own attempts at cure have been directed more to the cicatrisation of existing abscesses, and the arrest of further deposition, than to the relief of the liver. Towards this viscus, however, I would earnestly crave the attention of the profession. Waiving altogether the treatment of phthisis, when fully declared, as foreign to the scope of this paper, I would fain seek to *prevent* that declaration *in limine*. We hold in our hands the happiness of thousands, therefore our responsibilities are great; but surely it is not opposed to the dignity of medicine to eschew the drug when our object can be better attained by parental care and the study of diet. Regarding the liver and heart as the heads of two great and distinct circulations—the former being the money-making or working partner, while the latter is concerned in the paying or distribution of the coin made—I would suggest that we should try to work the liver as little as possible, and only introduce such food into the system as resembles the products elaborated there in health. To this end, shunning all medicines except oleaginous purgatives, I would advocate the administration of *small* and gradually increased doses of cod-liver oil, combined with a fair share of *pure* milk and plain white sugar. The oil would be taken up by the lacteals, and save the stomach; the sugar would be consumed in the liver, and assist in sustaining the temperature of the body; while the milk, *being pure*, and containing within itself all the essential salts and albuminous principles, would not be too much for the gastric juice, but would contribute towards maintaining the integrity of the blood. This simple dietary, varied occasionally by white meats or fish, and combined with pure air, warm clothing, moderate exercise, and cheerful influences, will speedily check the tendency to consumption, and stay its further development; and, while I feel assured of the efficacy of this mode of treatment, because founded on common sense, I cannot but raise my dissentient voice against that false and busy physicianship which drenches the human stomach with half a dozen contradictory pharmaceutical compositions, to meet as many distinct symptoms, and neutralise each other. And, in the name of common charity and humanity, let us try to save our fellow-creatures from the lingering tortures of that silent slow-moving malady which spares neither flower nor weed, neither green corn nor ripe, but marks its track by the prostration of noble hearts and of budding hopes, through its breath, withered into premature decay, by meeting it calmly in the dawn of its career, and crushing it triumphantly in the cause of science and of hygiene.

DRINKING FOUNTAINS. A director of the Midland Railway has erected, at his own expense, a marble drinking fountain on the Leicester station. These fountains are becoming very general; but it is stated that, wherever they have been put up, drunkenness has decreased. At the conduit on the Market Hill, there is a single ladle to enable thirsty souls to obtain a draught, and it is truly astonishing to observe how much it is used. Why should there not be more stations to supply water both to man and beast? (*Cambridge Independent*.)