

INSPECTION.

MANY diseases of the chest and abdomen, acute as well as chronic, are recognisable at the first glance by a *change in the colour of the skin*. The most common of these changes is

BLANCHING.

A high degree of pallor has always a pathological significance; in a less marked form, however, (as it is often seen in perfectly healthy persons), it can be so regarded only when the symptoms of the disease, subjective and objective, offer a satisfactory explanation of its presence. It attracts attention most readily on those exposed parts which are normally of a red colour, the face, the mucous membrane of the lips, and the conjunctivæ.

It is caused, in every case, either by a *diminution of the volume of blood in circulation*, by *deficiency in the number of red blood-corpuscles*, or by an *unfilled condition of the capillaries*.

The *decrease in the quantity of the blood* may be *direct*, the result of hæmorrhage from the lungs, stomach, bowels, or urogenital apparatus, or of the effusion of blood or blood-tinged exudation into the serous cavities. Or it may be *indirect*, caused by a deficient supply or malassimilation of food,—as in all febrile affections, in convalescence from severe acute disease, and in many chronic diseases of the alimentary canal and the organs connected with it. Further, we have the same condition produced when the system, through loss of albumen, is deprived of much blood-forming material; instances of this are seen in cases in which there is copious effusion into the pleuræ, pericardium, and peritoneum, in general anasarca and in albuminuria.

Blanching from a *deficiency in the number of the red blood-corpuscles* comes under our notice chiefly in chlorosis and other anæmic conditions (anæmia splenica, pernicious anæmia) and in leukæmia. In chlorosis not only is the total quantity of blood in circulation probably diminished, but the red corpuscles may be reduced to one-half their normal relative number, giving rise to such an extreme degree of pallor as is rarely observed in any other affection; in leukæmia the alteration of the proportion of

white corpuscles to red is due both to increase of the former and decrease of the latter. In these diseases, also, owing to the fewness of the red corpuscles, the blood is markedly wanting in hæmoglobin, which may be reduced to one-third the normal quantity; this is especially characteristic of some cases of chlorosis in which, not the number of the red corpuscles, but their hæmoglobin, seems to be lessened.

Independently of any change in the blood, however, extreme paleness of the skin may show itself when, from any cause, *the heart does not contract with sufficient force to adequately fill the arteries and capillaries*. Of the many varieties of pallor which come under this category, the following may be mentioned:—that which is connected with emotional influences such as fear or anxiety, and which is immediately produced by contraction of the arterioles from irritation of the vasomotor nerves; that of syncope, which is due to sudden enfeeblement or even momentary cessation of the heart's action; that which appears in fatty degeneration of the heart, and in those cardiac diseases in which, from engorgement of the pulmonary vessels, the left ventricle contains less blood than normally (*e.g.*, mitral disease). It should be remarked that while it is true that blanching may arise from any one of the above-named causes, it most frequently happens that two or more of them co-operate in producing it.

The skin is sometimes simply white, as in chlorosis, when the patient, provided there be no disturbance of nutrition, has otherwise the appearance of health. At other times it is of a dull earthy colour, at once giving the impression of serious organic disease associated with disordered nutrition and emaciation; this is found chiefly in cases of malarial cachexia of old standing, leukæmia, amyloid and carcinomatous degenerations, and many other diseases of the abdominal organs. The absolute colourlessness of the skin is occasionally varied by the presence of slight cyanosis; this occurs most often with those cardiac affections in which there is a tendency to overloading of the pulmonary circulation, and in various diseases of the respiratory apparatus. Caseous pneumonic infiltration, even in its early stages, is marked by pallor of the face, partly from repeated hæmoptyses, but principally from the remittent fever which accompanies it; the whole countenance may be uniformly pale, or certain spots may be of a bright red colour,—the well-

known "hectic flush" of consumptives. In these cases, also, the colour comes and goes rapidly under slight physical or mental excitement, the face being suddenly overspread by a fiery blush, which just as suddenly disappears. These symptoms are most pronounced in young persons with a delicate skin and in whom the disease runs a subacute course.

Another common change in the colour of the skin is

CYANOSIS.

It varies much in intensity, from a light bluish tint to a dark bluish-black coloration. In the extremities, and wherever the skin is most delicate and most vascular,—in the lips, the point of the nose, the eyelids, ears, nails, tips of the elbows, and fronts of the knees,—it is earliest and most distinctly seen; even when the cyanosis is extreme, and the whole surface of the body is discoloured, it is most marked in the parts mentioned. The mucous membranes have the same bluish hue as the skin. Together with the lividity the superficial veins (in the arm, neck, &c.) are seen to be so overloaded with blood as to stand out like bluish knotted cords. These cases must be distinguished from others in which the change of colour is merely *local*, and which will subsequently be discussed. Cyanosis is always an indication that the blood is deficient in oxygen and surcharged with carbonic acid,—that it is either not completely oxidised in the lungs, or that, on account of passing slowly through the capillaries, it gives off too much oxygen to the tissues and absorbs an excess of carbonic acid from them. It arises from one or both of these causes, incomplete oxidation of the blood in the lungs and passive congestion in the capillaries and veins, in various diseases of the respiratory and circulatory organs.

Diseases of the organs of respiration lead to cyanosis either by preventing the access of air to the lungs or by diminishing the respiratory surface, both causes being usually in operation at the same time. The *former* condition is present in those affections in which there is any obstruction in the air-passages, especially the *larynx* or *trachea*, as in spasm of the glottis, croup, and laryngeal diphtheritis, intralaryngeal tumours in the neighbourhood of the rima glottidis, enlargements of the thyroid body, and acute or chronic bronchial catarrh, in which the free

entrance of air is hindered by the swelling of the mucous membrane of the smaller bronchi.

Cyanosis results also from *lessening of the breathing surface*, in those diseases in which *the pulmonary vesicles are filled with infiltration* (as in the stage of hepatization in pneumonia), or are *subjected to pressure from without* (as in pleuritic effusion), or *lose their elasticity* and become *inexpansible* (as in emphysema). In these and similar affections the air is not admitted into the alveoli, and when the whole of one lung is implicated the area available for respiration is reduced by one-half. But the intensity of the cyanosis is not directly proportionate to the extent of lung surface from which the air is excluded. The causes of this absence of direct relation are very various, generally peculiar to each case, and therefore not easily generalised; the only constant circumstance is that the *cyanosis is most marked* when the obstruction to the respiration is *suddenly* set up and when the patient is *strong* and *plethoric*. Thus, pneumothorax following gunshot wound or the bursting of a cavity in the lung causes very considerable cyanosis,—a symptom which is not nearly so noticeable in an equally extensive, but gradually-developed, compression of the lung by pleuritic effusion. There is a similar contrast between the symptoms of the *acute* infiltration of pneumonia and those of the *chronic* infiltrations leading eventually to destruction of the air-cells by condensation or atrophy of the lung tissue. Apart from special individual differences, the explanation of the fact that the slowly-advancing diminution of the respiratory surface in chronic disease is associated with but little lividity evidently is that the healthy lung gradually expands, and in that way comes to supply, to a certain extent, the place of the partially disabled lung. That robust, full-blooded persons, suffering from embarrassment of the respiration, should present a higher degree of cyanosis than those who are anæmic is to be expected, as the more plethoric an individual is the more completely are his vessels—and among them those of the lungs—filled, and it is well known that the oxidation of the blood goes on more slowly when the vessels are distended than when they are partially empty. In phthisis, on the other hand, as the emaciation and decrease in the quantity of blood in circulation keep pace with the reduction of the respiratory surface, the cyanosis is always slight. Cyanosis

becomes extreme when, as in the emphysema which accompanies chronic bronchitis, both conditions which tend to produce it are present,—obstruction of the air-passages and diminution of functionally active lung surface.

In vesicular emphysema the lividity of the skin is greatly aggravated by the state of *engorgement of the systemic veins*. In consequence of the emphysematous dilatation of the air-cells the capillaries distributed in their walls are partially or totally obliterated, and thus a considerable resistance is offered to the emptying of the right side of the heart. This difficulty the heart is for some time enabled to overcome by hypertrophy and increase of power of the right ventricle; eventually, however, its muscular fibre becomes the seat of fatty degeneration, its action becomes weaker, the right cavities do not discharge the whole of their contents into the lungs and therefore cannot receive the whole of the blood brought to them by the *venæ cavæ*, so that a permanent engorgement of the venous system is established, manifesting itself in an overloaded condition of the superficial veins (the cervical and brachial veins, &c.), and in cyanotic discoloration of the extremities.

Cyanosis may further be directly caused by *congenital malformations of the heart* or by *acquired valvular disease*. Of the former the most important are the rising of the aorta from the right ventricle, the existence of openings in the interventricular septum, and generally such malformations as permit of direct communication between the two sides of the heart; but persistence of the foramen ovale or ductus arteriosus does not usually occasion very considerable cyanosis. Mitral insufficiency, contraction of the left auriculo-ventricular orifice, tricuspid disease, and fatty degeneration, being generally accompanied by overloading of the right heart, of the pulmonary circulation, and finally also of the systemic veins, tend to induce lividity; this, however, does not occur so long as the impediment to the circulation is counterbalanced by increase of power and hypertrophy of the heart, for although in these cases the vessels of the lungs are over-filled, sufficient oxygenation of the blood is secured by the greater *rapidity of the respiration*. It is only when the right heart is enfeebled by fatty metamorphosis that it remains constantly overcharged with blood, and the complete emptying of the *venæ cavæ* is prevented; there is thus developed a state of passive stagnation of the current through the capillaries and veins of the body generally, and cyanosis from the

consequent free absorption of carbonic acid and the large quantity of oxygen parted with.

In certain diseases of the *abdominal organs cyanosis* may be a very prominent symptom. This is observed when the diaphragm is forced upwards, and the adequate expansion of the lungs in that way hindered, by the presence of fluid or large tumours in the abdominal cavity (ascites, ovarian tumours, &c.). Cyanosis from such causes, when it does occur, is usually very intense. Lastly, marked lividity may result from partial or complete obstruction of the circulation by *compression* or *obliteration* of one of the *large venous trunks*: in this case the cyanosis is *local*, not general, and confined to the region in immediate connection with the vein implicated. The most common examples of this are seen in the cyanotic hue of the forearm and hand on compressing the median vein as a preliminary to venesection, and of the face in severe attacks of coughing. In the latter instance the increase of pressure within the chest takes effect also on the large intrathoracic veins, so as to render turgid the jugular and facial veins. The lividity following occlusion of the veins of the lower limbs by thrombosis is not of a very marked character, as the engorgement of the vessels is relieved by a dropsical effusion into the subcutaneous tissues, and the circulation in the capillaries of the skin almost completely arrested by the pressure. In the rare cases in which the *venæ cavæ* are entirely obliterated the cyanosis appears in the upper or lower parts of the body, according as it is the superior or inferior cava which is involved.

The livid hue of the skin in *rigors*, and that produced by the influence of *cold* on exposed parts, are due to the contraction of the superficial arterioles and capillaries, and the consequent retardation of the current of blood through them.

ICTERUS.

This *yellow* discoloration is sometimes perceptible only as a slight golden glittering appearance of the most transparent parts, such as the conjunctivæ; at other times it is citron-yellow, orange, or even green or brownish-green (Melan-Icterus). In all severe cases it is observable on the general surface of the body, differences in intensity at various points arising from variations in the delicacy and normal colour of the skin; thus

the skin of the breast, and other parts usually covered, becomes more deeply stained than that of the face or the forearms of working people. When the blood is pressed out of the capillaries of such parts, if the jaundice be very marked, the tissues also are seen to have the same yellowish hue; so also the mucous membranes, the internal organs, tissues, and fluids, all participate in this discoloration. The perspiration, the urine, and sometimes even the sputa, are similarly tinged, while the feces generally lose their brown colour and acquire a grey or a light *clay-like* appearance. Icterus almost invariably arises from the presence of some mechanical obstacle to the free flow of bile from the ductus choledochus into the duodenum; the secretion thus accumulates in the bile-ducts and, when these become over-distended, passes through their walls and is absorbed into the blood. This is known as Jaundice from obstruction or absorption. The most frequent cause of this impeded flow of bile is catarrh of the duodenum, the orifice of the gall-duct being closed by the swelling of the mucous membrane (Icterus duodenalis). Closure of the common duct, or of the hepatic duct, or of several of its smaller divisions (by gall-stones, carcinomatous tumours, cirrhosis, or echinococcus cysts), or decrease of the lumen of the various ducts (as by diffuse catarrh), tend to produce more or less icterus. The most severe form, Melan-icterus, is met with almost exclusively in acute yellow atrophy of the liver.

The only disease of the respiratory organs which is complicated by jaundice and duodenal catarrh, and that in a mild form, is the so-called *bilious pneumonia*. Icterus appears in the later stages of cardiac diseases when, the heart's action being no longer powerful enough to compensate for the embarrassment due to mitral or tricuspid disease or fatty degeneration, there is congestion of the portal circulation, swelling of the liver, and secondary catarrh of the hepatic ducts. Even in these cases it is never very intense, the skin being merely of a dull yellowish colour, modified, as there is usually also more or less passive congestion of the whole venous system, by a slight tinge of cyanosis.

Jaundice sometimes occurs independently of any mechanical obstruction to the escape of bile into the duodenum, in pyæmia, yellow fever, anæmia, after inhalation of chloroform and ether, occasionally after the exhibition of chloral hydrate, and in new-born children.

This form is named *hæmatogenous icterus*,—as distinguished from the forementioned *hepatogenous* variety,—as it is generally believed to be due to partial decomposition of the red blood-corpuscles and subsequent change of the colouring-matter so liberated (hæmoglobin) into a substance chemically related to the colouring-matter of the bile (bilirubin). This theory is based on the experimental facts that bilirubin may be detected in the urine, or that there may be a slight yellowish discoloration of the skin, after the injection of a solution of the salts of the biliary acids into the veins, these salts having a solvent power over the blood-corpuscles, or after injecting various acids which dissolve their hæmoglobin. Transfusion, or even the mere introduction of a quantity of water into the veins, depriving the corpuscles of their hæmoglobin by the operation of the laws of diffusion, leads to the same result. In old extravasations of blood also the presence of biliary colouring matter has been demonstrated. Notwithstanding this physiological evidence, doubt has lately been thrown on the propriety of retaining in our classification a *hæmatogenous* variety of jaundice, inasmuch as the biliary acids, whose supposed absence from the urine in hæmatogenous icterus and presence in that of hepatogenous icterus have been regarded as sufficient grounds for the assumption of two genetically different forms of the affection, have been found also in the urine in pyæmia (Naunyn), and are stated to exist in traces in all urines (Vogel and Dragendorff); and further, many cases hitherto considered as of hæmatogenous origin, hepatogenous causes not being demonstrable, must now come under the latter category as, even though the liver be anatomically intact, jaundice may be produced simply by nerve-influence, whereby the calibre of the gall-ducts is diminished, the flow of bile mechanically obstructed, and the bile itself absorbed into the circulation.—Lowering of the blood-pressure in the hepatic capillaries causes decrease or even suppression of the secretion of bile, which is then absorbed within the liver (Heidenhain and Lichtheim). Of this nature are the icterus of animals which have been starved, that which is associated with free discharge of bile through a biliary fistula, that connected with closure of the portal vein, and probably also that of the new-born (as after birth the stream of blood coming from the umbilical veins to the portal vein ceases). The jaundice in poisoning by phosphorus, which was formerly thought to be hæmatogenous, is obviously hepatogenous, being caused by catarrh of the duodenum and partial closure of the orifice of the ductus choledochus (Virehow).

PIGMENTATION OF THE SKIN.

From the discolorations of the skin just referred to, which have their origin in a change in the colour of the blood, are to be distinguished other varieties closely resembling them, due to *deposit of pigment in the tissue of the cutis*. An instance of this is seen in the *bronzing* which most usually accompanies disease

of the supra-renal capsules (known as Addison's disease), but which sometimes presents itself when these organs are perfectly healthy. It occurs in all degrees of intensity, from dull yellowish brown to bluish black, when it might, at the first glance, be easily mistaken for extreme cyanosis: in two cases which came under my own observation the skin was quite as dark as that of a mulatto or negro. The bronzing usually involves large tracts of skin,—when the disease has lasted long generally the whole surface of the body; in most cases it affects specially the exposed parts (the face, backs of the hands), those which in health are most deeply pigmented (genital organs, nipples), and those which are subjected to pressure or friction (the folds of the axillæ, inner surface of the thighs, &c). Its characteristic feature, which defines it sharply from all similar kinds of staining of the skin, developed suddenly or slowly in conjunction with disorders of the generative system, psychical disturbances, &c., is that the conjunctiva bulbi and finger nails are never implicated. Another peculiarity noticed specially in cases of long standing is the occurrence of *scattered spots of pigmentation* both in the already discoloured skin and on the *mucous membrane of the lips and mouth*. Pigmentation of the internal organs in Addison's disease has not yet been observed. The cause of the bronzing of the surface, and the explanation of its connection with disease of the supra-renal capsules, are still unknown.

Argyria, staining of the skin from the long-continued internal use of nitrate of silver, more rarely from painting the throat with a solution of the same salt (Silvestri, Duguet, Krishaber), is but seldom met with, and consists of a deposit of black granular particles of metallic silver, or of silver compounds, in the cutis.* It is exceedingly like the greyish blue cyanotic hue which is so common in congenital malformations of the heart, but is distinguished from it, as is also the forementioned bronzing of the skin, by the fact that it does not disappear on pressure. It sometimes extends over the whole surface (though it may not be of the same deep shade at every point), is at other times confined to certain regions, especially to the exposed parts, and does not pass away on ceasing the administration of the nitrate of silver. It has no general constitutional effect. The deposit of silver is found not only in the skin, but also in the mucous and serous membranes, and in the internal organs (Riemer, &c.).

* In one case observed by the author, that of a patient suffering from grey degeneration of the posterior columns of the spinal cord, about 24 grammes of the nitrate of silver had been taken in the course of three years; it was only in the third year that the first indications of argyrosis were noticed.

Pigmentation of the skin in small circumscribed spots comes very frequently under notice. Many of these spots are of artificial origin, appearing after the application of vesicants, sinapisms, irritating ointments and liniments, while others are the sequela of exanthematous eruptions, ulcers, &c. Though they may have no direct relation to the disease for which a patient may be under examination, they nevertheless afford much valuable information regarding his pathological history, and supply data which enable us to judge better of the accuracy of his statements.

Pityriasis versicolor is a discoloration of the skin confined to certain regions, and caused by the growth of a parasite (*microsporon furfur*) in the horny layer of the epidermis. It is found in patches of variable size, slightly elevated above the surrounding surface, irregular in shape, and dull yellow or yellowish brown in colour; its most common seat is on the breast, the back, or upper extremities, more rarely on the abdomen or lower extremities. These patches occasionally peel off spontaneously, or may be easily detached in the form of branny scales, when the skin below is discovered to be almost unchanged. The scales, on microscopic examination, are seen to consist of masses of parasitic filaments, between which numerous roundish spores are arranged in clusters. *Pityriasis versicolor* is often associated with pulmonary phthisis and other chronic diseases leading to anæmia, but it frequently appears also in those who are in good health.

Similar staining of the skin, though not of vegetable parasitic nature, occurs during pregnancy and in the course of diseases of the female generative organs, such as tumours of the ovaries, uterus, &c. In phthisis pulmonalis and many chronic diseases of the abdominal organs the face often assumes a dull yellowish hue, quite different from that of *pityriasis versicolor*.

CONSTITUTION.—GENERAL NUTRITION.

The *variety of constitution* and the *condition of the nutrition* of the patient can also, to a certain extent, be ascertained by inspection. A knowledge of the *constitution* with which we have to deal furnishes us with many indications of great prognostic and diagnostic value. Thus, those who are feebly constituted may always be said to be in more danger from an