the child is constipated from birth and may not have a natural movement for years and yet thrive and develop. An instance of the kind was in my ward recently in which a baby of seven months had never had a movement without preliminary injections. The abdomen became swollen every day, but subsided after an injection and the passage of a long catheter. No stricture could be felt. I have already referred to a case of W. E. Hughes's, in which there was enormous dilatation of the large bowel with persistent constipation. In some of these patients there may be constricting bands, or, as in a case of Cheever's, a congenital stricture.

Dietetic causes are more common. In sucklings it often arises from an unnatural dryness of the small residue which passes into the colon, and it may be very difficult to decide whether the fault is in the mother's milk or in the digestion of the child. Most probably it is the latter, as some babies may be persistently costive on natural or artificial foods. Too much casein in the milk is believed by some writers to be the cause. In older children it is of the greatest importance that regular habits should be enjoined. Carelessness on the part of the mother in this matter often lays the foundation of troublesome constipation in after life. Impairment of the contractibility of the intestinal wall in consequence of inflammation, disturbance in the normal intestinal secretions, and mechanical obstruction by tumors, twists, and intussusception are the chief local causes.

Treatment.—Much may be done by systematic habits, particularly in the young. The desire to go to stool should always be granted. Exercise in moderation is helpful. In stout persons and in women with pendulous abdomens the muscles should have the support of a bandage. Friction or regularly applied massage is invaluable in the more chronic cases. A good substitute is a metal ball weighing from four to six pounds, which may be rolled over the abdomen every morning for five or ten minutes. The diet should be light, with plenty of fruit and vegetables, particularly salads and tomatoes. Oatmeal is usually laxative, though not to all; brown bread is better than that made from fine white flour. Of liquids, water and the aërated mineral waters may be taken freely. A tumblerful of cold water on rising, taken slowly, is efficacious in many cases. A glass of hot water at night may also be tried alone. A pipe or a cigar after breakfast is with many men an infallible remedy.

When the condition is not very obstinate it is well to try to relieve it by hygienic and dietetic measures. If drugs must be used they should be the milder saline laxatives or the compound liquorice powder. Enemata are often necessary, and it is much preferable to employ them early than to constantly use purgative pills. Glycerine either in the form of suppository or as a small injection is very valuable. Half a drachm of boric acid placed within the rectum is sometimes efficacious. The injections of tepid water, with or without soap, may be used for a prolonged period with good effect and without damage. The patient should be in the dorsal position with the hips elevated, and it is best to let the fluid flow in slowly from a fountain syringe.

There are various drugs which are of special service, particularly the combination of ipecacuanha, nux vomica, or belladonna, with aloes, rhubarb, colocynth, or podophyllin. Meigs recommends particularly the combination of extract of belladonna (gr. $\frac{1}{12}$), extract of nux vomica (gr. $\frac{1}{4}$), and extract of colocynth (gr. ij), one pill to be taken three times a day. In anæmia and chlorosis a sulphur confection taken in the morning, and a pill of iron, rhubarb, and aloes throughout the day are very serviceable.

In children the indications should be met, as far as possible, by hygienic and dietetic measures. In the constipation of sucklings a change in the diet of the mother may be tried. Drinking of water, barley water, or oatmeal water will sometimes obviate the difficulty. If laxatives are required simple syrup, manna, or olive oil may be sufficient. The conical piece of soap, so often seen in nurseries, is sometimes efficacious. Small injections of cold water may be used. Large injections should be avoided if possible. If it is necessary to give a laxative by the mouth the castor oil or fluid magnesia is the best. If there are signs of gastro-intestinal irritation rhubarb and soda or gray powder may be given. In older children the diet should be carefully regulated.

VIII. DISEASES OF THE LIVER.

I. JAUNDICE (*Icterus*).

1. **Jaundice as a Symptom.**—Cases with icterus may be divided into two great groups: Those in which there is obstruction, either in the smaller or in the larger ducts—the *hepatogenous* form; cases in which the jaundice is due to suppression of the function of the liver-cells, as in the widespread necrosis of acute yellow atrophy, or to an excess of the chromatogenous material, as in malaria, pernicious anæmia, and certain fevers, in which the liver function cannot keep pace with the blood destruction (hæmolysis)—*hæmatogenous* or non-obstructive jaundice.

The following classification of the causes of hepatogenous jaundice is arranged by Murchison, to whose writings on the liver we owe so much: Obstruction (1) by foreign bodies within the ducts, as gall-stones and parasites; (2) by inflammatory tumefaction of the duodenum or of the lining membrane of the duct; (3) by stricture or obliteration of the duct; (4) by tumors closing the orifice of the duct or growing in its interior; (5) by pressure on the duct from without, as by tumors of the liver itself, of the stomach, pancreas, kidney, or omentum; by pressure of enlarged glands in the fissure of the liver, and, more rarely, of abdominal aneurism,

fæcal accumulation, or the pregnant uterus; (6) to these may be added lowering of the blood pressure in the liver, so that the tension in the smaller bile-ducts is greater than in the blood-vessels. In this class very probably may be placed the cases resulting from mental shock or depressing emotions.

General Symptoms of Obstructive Jaundice.—(1) Icterus, or tinting of the skin and conjunctivæ. The color ranges from a lemon-yellow in catarrhal jaundice to a deep olive-green or bronzed hue in permanent obstruction. In some instances the color of the skin is greenish black, the so-called "black jaundice."

(2) Of other cutaneous symptoms, pruritus in the more chronic forms may be intense and cause the greatest distress. It may precede the onset of the jaundice, but as a rule it is not very marked except in cases of prolonged obstruction. Sweating is common, and may be curiously localized to the abdomen or to the palms of the hands. Lichen, urticaria, and boils may develop, and the skin disease known as xanthelasma or vitiligoidea.

(3) The secretions are colored with bile-pigment. The sweat tinges the linen; the tears and saliva and milk are rarely stained. The expectoration is not often tinted unless there is inflammation, as when pneumonia coexists with jaundice. The urine may contain the pigment before it is apparent in the skin or conjunctiva. The color varies from light greenish yellow to a deep black-green. Gmelin's test is made by allowing five or six drops of urine and a similar amount of common nitric acid to flow together slowly on the flat surface of a white plate. A play of colors is produced—various shades of green, yellow, violet, and red. In cases of jaundice of long standing or great intensity the urine usually contains albumen and always bile-stained tube-casts.

(4) No bile passes into the intestine. The stools therefore are of a pale drab or slate-gray color, and usually very fetid and pasty. There may be constipation; in many instances, owing to decomposition, there is diarrhœa.

(5) Slow pulse. The heart's action may fall to 40, 30, or even to 20 per minute. It is particularly noticeable in the cases of catarrhal jaundice, and is not as a rule an unfavorable symptom.

(6) Hæmorrhage. Ecchymoses are not uncommon in severe jaundice, particularly in the more malignant forms.

(7) Cerebral symptoms. Irritability, great depression of spirits, or even melancholia may be present. In any case of persistent jaundice special nervous phenomena may develop and rapidly prove fatal—such as sudden coma, acute delirium, or convulsions. Usually the patient has a rapid pulse, slight fever, and a dry tongue, and he passes into the so-called "typhoid state." These features are not nearly so common in obstructive as in febrile jaundice, but they not infrequently terminate a chronic icterus in whatever way produced. The group of symptoms has been termed

cholæmia or, on the supposition that cholesterin is the poison, *cholesteræmia;* but the true nature of the poison has not yet been determined. In some of the cases the symptoms may be due to uræmia.

Non-obstructive jaundice may be thus classified:

(1) The form in which there is wide-spread necrosis of the liver-cells and direct interference with their bile-forming function, as in acute yellow atrophy, and possibly in certain cases of hypertrophic cirrhosis. Strictly speaking, this is a hepatogenous jaundice.

(2) The toxic form. The poisons of yellow fever, malaria, typhoid, epidemic jaundice, and pyæmia; snake virus, as well as chloroform, ether, phosphorus, and mercury, act by causing increased destruction of the red blood-corpuscles. More blood-pigment is set free than can be disposed of by liver, spleen, or kidneys, and the bilirubin (transformed hæmoglobin) is deposited in the tissues. The *symptoms* of hæmatogenous jaundice are not nearly so striking as in the obstructive variety. The skin has in many cases only a light lemon tint. In the severer forms, as in acute yellow atrophy, the color may be more intense, but in malaria and pernicious anæmia the tint is usually light. In these mild cases the urine may contain little or no bile-pigment, but the urinary pigments are considerably increased. The stools are not clay-colored and may in some instances be very dark. In the toxic forms of this variety the cerebral symptoms are marked and there may be active delirium, coma, or convulsions.

2. **Icterus Neonatorum.**—New-born infants are liable to jaundice, which in some instances rapidly proves fatal. A mild and a severe form may be recognized.

The *mild icterus* of the new-born is a common disease in foundling hospitals and is not very infrequent in private practice. The discoloration appears early, usually on the first or second day, and is of moderate intensity. The urine may be bile-stained and the fæces colorless. The nutrition of the child is not seriously disturbed, and in the majority of cases the jaundice disappears within two weeks. It is supposed that the diminished pressure in the portal vessels, following the severance of the placental circulation, allows absorption from the bile capillaries, in which the tension is greater. Possibly too, as Quincke suggests, the ductus venosus may remain open, allowing some of the portal blood containing bile to flow into the systemic circulation. On the other hand, it is held that the jaundice is hæmatogenous and due to the destruction of large numbers of red blood-corpuscles during the first few days after birth.

The *severe form* of icterus in the new-born may depend upon (*a*) congenital absence of the common or hepatic duct, of which there are several instances on record; (*b*) congenital syphilitic hepatitis; and (*c*) septic poisoning, associated with phlebitis of the umbilical vein. This is a severe and fatal form, in which also hæmorrhage from the cord may occur.

Occasionally jaundice sets in and persists for many weeks, or even months, without interfering seriously with the nutrition of the child.

3. Acute Yellow Atrophy of the Liver; Malignant Jaundice; Icterus Gravis.

Definition.—Jaundice associated with marked cerebral symptoms and characterized anatomically by extensive necrosis of the liver-cells with reduction in volume of the organ.

Etiology.—This is a rare disease. In a somewhat varied post-mortem and clinical experience no instance has fallen under my observation. On the other hand, a physician may see several cases within a few years, or even within a few months, as happened to Riess, who saw five cases within three months at the Charité, in Berlin. The disease seems to be rare in this country. No case is reported in the Transactions of the Pathological Societies of New York (Vols. I to III) or of Philadelphia (Vols. I to XIII). The disease is more common in women than in men. Of the 100 cases collected by Legg, 69 were in females; and of Thierfelder's 143 cases, 88 were in women. There is a remarkable association between the disease and pregnancy, which was present in 25 of the 69 women in Legg's statistics, and in 33 of the 88 women in Thierfelder's collection. It is most common between the ages of twenty and thirty, but is occasionally seen in young children. It has followed fright or profound mental emotion. Though the symptoms produced by phosphorus poisoning closely simulate those of acute yellow atrophy, the two conditions are not identical.

Morbid Anatomy.—The liver is greatly reduced in size, looks thin and flattened, and sometimes does not reach more than one half or even one third of its normal weight. It is flabby and the capsule is wrinkled. On section the color is of a yellowish brown, yellowish red, or mottled, and the outlines of the lobules are indistinct. The yellow and dark-red portions represent different stages of the same process—the yellow an earlier, the red a more advanced stage. The organ may cut with considerable firmness. Microscopically the liver-cells are seen in all stages of necrosis, and in spots appear to have undergone complete destruction, leaving a fatty, granular *débris* with pigment grains and crystals of leucin and tyrosin. The interlobular tissue may be normal, but in many cases there is a marked proliferation of small cells, which was present in 9 of the 12 cases examined by Riess. Micro-organisms have been noted by several observers. The bile-ducts and gall-bladder are empty.

The other organs show extensive bile staining, and there are numerous hæmorrhages. The kidneys may show marked granular degeneration of the epithelium, and usually there is fatty degeneration of the heart. In a majority of the cases the spleen is enlarged.

Symptoms.—In the initial stage there is a gastro-duodenal catarrh, and at first the jaundice is thought to be of a simple nature. In some instances this lasts only a few days, in others two or three weeks. Then severe symptoms set in—headache, delirium, trembling of the muscles, and, in some instances, convulsions. Vomiting is a constant symptom, and blood may be brought up. Hæmorrhages occur into the skin or from the mucous surfaces; in pregnant women abortion may occur. With the development of the head symptoms the jaundice usually increases. Coma sets in and gradually deepens until death. The body temperature is variable; in a majority of the cases the disease runs an afebrile course, though sometimes just before death there is an elevation. In some instances, however, there has been marked pyrexia. The pulse is usually rapid, the tongue coated and dry, and the patient is in a "typhoid state."

The urine is bile-stained and often contains tube-casts. Leucin and tyrosin are constantly present; the former as rounded disks, the latter in needle-shaped crystals, arranged either in bundles or in groups. The tyrosin may sometimes be seen in the urine sediment, but it is best first to evaporate a few drops of urine on a cover-glass. In the majority of cases no bile enters the intestines, and the stools are clay-colored. The disease is almost invariably fatal. In a few instances recovery has been noted. I saw in Leube's clinic, at Wurzburg, a case which was convalescent.

Diagnosis.—Jaundice with delirium, diminution of the liver volume, delirium, and the presence of leucin and tyrosin in the urine, form a characteristic and unmistakable group of symptoms.

It is not to be forgotten that any severe jaundice may be associated with intense cerebral symptoms. The clinical features in certain cases of hypertrophic cirrhosis are almost identical, but the enlargement of the liver, the more constant occurrence of fever, and the absence of leucin and tyrosin are distinguishing signs. Phosphorus poisoning may closely simulate acute yellow atrophy, particularly in the hæmorrhages, jaundice, and the diminution in the liver volume, but the gastric symptoms are usually more marked, and leucin and tyrosin are stated not to occur in the urine.

No known remedies have any influence on the course of the disease.

II. AFFECTIONS OF THE BLOOD-VESSELS OF THE LIVER.

(1) **Anæmia.**—On the post-mortem table, when the liver looks anæmic, as in the fatty or amyloid organ, the blood-vessels, which during life were probably well filled, can be readily injected. There are no symptoms indicative of this condition.

(2) **Hyperæmia.**—This occurs in two forms. (*a*) *Active hyperæmia.* After each meal the rapid absorption by the portal vessels induces transient congestion of the organ, which, however, is entirely physiological; but it is quite possible that in persons who persistently eat and drink too much