delayed. The fungus grows readily and reasonably rapidly on standard mycological media and can be recognized by morphological criteria; if doubt still remains, it is not difficult to produce experimental infections in animals. The demonstration of the parasite in tissues and exudates is sometimes made easier by techniques such as fluorescent antibody staining or periodic-acid-Schiff staining after treating the tissue with diastase.

Serological procedures may also be valuable in the diagnosis, especially in disseminated forms of sporotrichosis. Several agglutination and complement fixation tests have been successfully used, though these give less satisfactory results in dermal infections. Skin tests have been found useful for diagnosis, but unfortunately suitable diagnostic antigens are not available commercially.

The classical method of treatment, potassium iodide by mouth, is usually very successful in dermal forms of the disease. Since the parasitic yeast phase is very intolerant of heat above 37°C, limited lesions may also be cured by local heating with hot compresses and rubificient ointments. When dissemination of the disease has occurred, however, the only treatment likely to be successful is amphotericin B given intravenously, very often combined with surgical measures.

Diagnosis of Biliary Obstruction

A careful clinical history, physical examination, and biochemical tests will usually resolve jaundice into that due to pigment overload (haemolytic), to failure of the liver cell (hepatic), or to inability to excrete pigment (obstructive). There are still, however, some patients in whom the cause remains uncertain. Liver cell dysfunction may accompany or complicate biliary obstruction. In liver cell disorders, acute and chronic, obstructive features are commonly seen, and it is not unusual, for example, for a patient with viral hepatitis (normally a diffuse liver cell disease) to manifest the signs and biochemical data of pure obstruction. Some tests of liver function are abnormal in both types of liver disease—the serum alkaline phosphatase level is one.

Needle biopsy of the liver is more likely to be associated with complications in the jaundiced patient, but it can usually differentiate between liver cell disease and biliary obstruction. It does little, however, to identify the cause of the disorder in the case of the liver cell lesion and may not in difficult cases differentiate between intrahepatic biliary obstruction—which is largely a medical problem—and extrahepatic biliary obstruction—for which the treatment is surgical. Clearly there is a place for a test which both detects liver cell dysfunction and can also discriminate between intra- and extrahepatic biliary obstruction. Such a procedure has been described by E. G. Whiting and M. L. Nusynowitz. It entails the intravenous administration of 131I rose bengal and detection of its uptake by the liver and subsequent excretion through the biliary tract.

The first part of the test is a measure of liver cell function, and it is essentially similar to the measurement of bromsulphalein removal, though in this case extraction can be determined without taking serum samples and is not invalidated by the patient being icteric. By plotting values from a counter over the right temporal region a ratio of the 20 minute to the 5 minute count rate may be obtained (normal 0-40–0-52). In liver cell disease this ratio is increased, the 20 minute figure being higher owing to less effective removal of the dye by the liver.

Next a fatty meal is given to the patient and a counter placed over the left lower quadrant of the abdomen. The fatty meal makes the gall bladder contract and radioactive rose bengal is released into the gut. A rising count rate from the abdominal probe means that the biliary passages are patent, and thus that the diagnosis is not one of biliary obstruction. If there is no rise a further 150 microcuries of 131I rose bengal is given and a formal scintiscan of the liver, gall bladder, and intestines is performed. In intrahepatic biliary obstruction contrast material is detected in the liver alone, while in extrahepatic obstruction there is contrast in the liver and gall bladder, but in neither case is it present in the intestine.

The authors have studied 56 persons by this technique, including 10 normal persons, and found a 98% correlation between the final diagnosis and the result of the rose bengal test. There were, however, only ten patients with obstructive jaundice in the series.

Scintiscanning of the liver with 131I rose bengal or 131I bromsulphalein produces a different appearance from that found with reticuloendothelial uptake of material such as 198 Au or technetium 99mTc. On the whole less satisfactory pictures of hepatic form are obtained with substances actively removed by the liver cells rather than by the reticuloendothelial system. The former technique does allow some degree of estimation of liver cell uptake and biliary excretion and its incorporation as part of the test allows detection of intrahepatic space-occupying lesions.

Apart from its possible value in the differentiation between the major types of jaundice in the adult, previous workers have attempted to use the rose bengal test to distinguish between the two types of obstructive jaundice found in the neonatal period—namely, giant cell neonatal hepatitis and atresia of the biliary system. Such a distinction is important because of the need for laparotomy once bile duct atresia has been diagnosed. Usually, however, laparotomy is used diagnostically so that adequate biopsy material can be obtained. A test discriminating fully between these disorders would do away with this type of investigation. Using 131I rose bengal and collecting faecal samples R. L. Brent and L. J. Geppert noted low faecal excretion of the injected dose within 72 hours of the injection in biliary obstruction (bile duct atresia). Unfortunately a low excretion was found in at least one patient with neonatal hepatitis and no clear differentiation was possible. G. Ghadimi and A. Sass-Kortsak obtained better differentiation, and W. E. White and his colleagues, dispensing with faecal collections and using essentially the technique of Whiting and Nusynowitz, were able to distinguish these conditions by observations on the hepatic uptake of the dye, its excretion, and its appearance in the bowel.

Though complex apparatus is required for this type of test such equipment is beginning to make its appearance in most centres with a gastrointestinal department, and as a further way of preventing unnecessary diagnostic operations it may have a small but important diagnostic part to play.