families are needed for the statistical approach to the problem. In order to obtain the most information regarding maternal or paternal nondisjunction, the simultaneous determination of color blindness, Xg blood group, and G-6-PD deficiency, known to have polymorphic frequency in Greece, have been studied in 10 patients with XO Turner's syndrome and their available parents. Four families were informative. In the first the patient was Xg (a+) and the mother Xg (a−). In the second the patient and the father were G-6-PD deficient, while the mother was normal. Clearly in these two families the single X was of paternal origin. In a third family the patient was color-blind and the mother had normal color vision, and in the fourth the patient was Xg (a−) while her mother was Xg (a+). Unfortunately, in both cases the father was dead and since these two sex-linked characters cannot be detected in the heterozygous state the origin of the single X could not be located. Clearly the inclusion in this type of study of an X-linked trait which can be detected in the heterozygous condition is advantageous, as has been shown in the first family.

47. Clinical and experimental relationship between liver lymphatics and bile flow. O. Aagenaes, H. Sigstad, B. Cuderman, W. Krivit, and H. Sharp. *Univ. of Oslo, Norway, and Univ. of Minnesota, Minneapolis, USA.*

A syndrome with cholestasis in infancy and recurrent cholestasis and edema in the lower extremities in adulthood was presented in this Society in 1967. Further studies in our now 22 patients with this syndrome have shown that these children have abnormal lymph vessels in the legs before development of edema, and the cause of the edema is probably a congenital lymph vessel hypoplasia. A liver lymphangiography with Au^{198} in one adult patient with no cholestasis at time of examination failed to show the normal clearance of the radioactive gold to the thoracic lymph nodes. To study the relationship between liver lymph flow and bile flow, an experimental animal model was devised: all lymph nodes draining the liver were obstructed in cats while control animals were sham-operated. In one group of cats, the bile flow was studied shortly after the lymph obstruction, in another group 1 day later, and in yet another group 2 days later. The bile flow was the same in the lymph-obstructed and the sham-operated groups of cats studied on the day of lymph obstruction; in the lymph-obstructed cats studied 24 hr after lymph obstruction the bile flow was about 70% higher and the bile acid excretion more than 100% higher than in the sham-operated group. Forty-eight hours after the lymph obstruction, the bile flow was only slightly elevated in the lymph-obstructed group. Following the bile flow study an electron-dense material (lanthanum) was injected in the common bile duct, and biopsies from different parts of the liver were studied in the electron microscope. The injected lanthanum could be traced from the bile canaliculi to the intercellular spaces and to the Disse's spaces. The findings of this intimate relationship, both anatomically and functionally between the liver lymphatics and the biliary tree, compared with the clinical findings of abnormal peripheral lymphatics and an abnormal liver lymphangiography, indicate that a lymph anomaly in the liver may be the cause of the cholestasis in these patients.

48. Value of color scintiscanning in the diagnosis of cerebral, renal, and hepatic neoplasias in pediatrics. G. C. Mussa, M. Martini Mauri, and D. Bacolla. *Univ. of Turin, Italy.*

New high sensitivity apparatus and particularly the discovery of pure gamma-emitting, low energy, short half-life radioisotopes have brought the use of radioisotope techniques, especially scintiscanning, within the orbit of paediatric diagnosis. Here, a series of color scintiscans is presented, the children in question having been admitted for suspected cerebral, renal, and hepatic neoplasias. Tc^{99m} was used for the cerebral scans, colloidal Tc^{99m} sulfide for the hepatic, and Chlormerodrin Hg^{197} for the renal. The cerebral scintiscanning was performed on 25 children with suspected intracranial neoplasia. Seventy-six per cent of all cerebral tumours encountered were correctly localized. Within this percentage, the success rate with supratentorial tumors was 100% and with subtentorial 61.5%. Renal scintiscanning proves to be of particular value in the diagnosis of primary and metastatic tumors. While urography is an important tool for evaluating the morphology of the excretory cavities of the kidney, scintiscanning studies parenchyma conditions. Using colloidal Tc^{99m} which is localized by choice in the hepatosplenic reticuloendothelium, it is possible to detect the presence of primary hepatic tumors or metastases, if any. Findings showed that: (*1*) there are no particular contraindications to the use of scanning because the technique is free from toxicity, harmless, painless, and easy to use; (*2*) in pediatric age and, above all, in the early months of life, scanning makes it possible to solve diagnostic problems which in its absence would require much more laborious, traumatizing techniques; (*3*) with scanning, the effects of antiblastic therapy may be followed up over a period of time.

49. Changes in angiotensin II-like activity in arterial blood induced by hemorrhage in immature and adult rabbits. F. Broughton-Pipkin, J. C. Mott, and N. R. C. Roberton. *Nuffield Inst. for Med. Res., Oxford, England.*

The conclusion [1] that the presence of the kidneys may be more important in the regulation of arterial pressure in immature than adult rabbits suggested the desirability of measuring changes of angiotension II-like activity in arterial blood in response to hemorrhage. Angiotensin II-like activity was measured by the shortening of a rat's ascending colon, irrigated intraluminally with pronethalol 1 mg/ml/min. The colon was superfused with arterial blood from the rabbit in an external circuit, from which the blood was returned to a jugular vein [2]. The colon was calibrated by infusion of Hypertensin (Ciba) before withdrawal of 25% of the rabbit's calculated blood volume. After 30 min, the blood volume was restored with dextran and the calibration were repeated. Angiotensin II-like activity developing during hemorrhage in 6 adult rabbits was equivalent to 0.31 ± 0.07 ng/ml Hypertensin, whereas that in 10 immature rabbits averaged 1.76 ± 0.41 ng/ml ($P < 0.025$). Although Hypertensin is inactivated slightly less rapidly in immature rabbits, the difference is insufficient to account for the very much greater rise in angiotensin II-like activity seen during hemorrhage in immature than in adult rabbits.

1. Mott, J. C.: J. Physiol., *202:* 25 (1969).
2. Vane, J. R.: Brit. J. Pharmacol. Chemother., *35:* 209 (1969).

50. Clinical and genetic examinations in hypophosphatasia. K. Méhes and L. Klujber. *University Med. Sch., Pécs, Hungary.*

A 5-year-old boy with typical clinical and biochemical findings of hypophosphatasia of the late infantile-juvenile type has been observed. The patient's acid-base regulation and renal functions, such as glomerular filtration, concentration and acidifying capacity, proved to be normal; however, the tubular reabsorption of phosphates was impaired.

The paternal grandparents of the propositus were second and the maternal grand-grandparents third cousins. As to serum

alkaline phosphatase activity and phosphoethanolamine excretion, eight heterozygotes were found in the family. In these heterozygotes phosphate reabsorption was normal, alkaline phosphatase activity was significantly decreased in the urine, but normal or elevated in the granulocytes. When their marker features were examined, the small number of the hypophosphatasia gene-bearing patients allowed no statistical analysis, but it was conspicuous that these persons were Rh negative, were nontasters for phenylthiocarbamide (PTC), and had an excess of ulnar loops in finger dermatoglyphics.

51. Control of erythropoiesis in the fetal and neonatal rat. Y. MATOTH and R. ZAIZOV. *Tel Aviv Univ. Med. Sch., Israel.*

Erythropoiesis in the fetal rat was studied by measuring the incorporation of Fe59 into red cells of fetuses following injection of the isotope into their mothers on the 18th day of gestation. Two days later the amount of radioactivity present in the fetuses was determined by whole body counting. From this value and from the radioactivity found in fetal blood, the percentage incorporation of Fe59 into red cells (PI) was calculated. About 60% of the injected dose was found in the fetuses. The PI in individual fetuses varied with fetal weight, showing a linear relationship. It was therefore concluded that the rate of fetal growth is an important determinant of the rate of erythropoiesis. When mothers were bled or subjected to hypoxia during the 3rd week of pregnancy, or given 75–100 units of erythropoietin, they showed, as expected, an increase in PI. The fetuses likewise showed a significant increase in PI, controlled for fetal weight. The PI was decreased in mothers made polycythemic or kept at 4 atm abs but not in their fetuses. It has therefore been shown that in the rat erythropoietin can pass through the placenta and that the fetus responds to erythropoietin, either endogenously produced or transferred from the mother. Newborn rats hypertransfused during the 1st and 2nd postnatal weeks showed a marked decrease in PI and a good response to exogenous erythropoietin. Since the rat is born relatively immature and follows a fetal pattern of erythropoiesis for the first 2 postnatal weeks, these observations provide further evidence that erythropoiesis in the fetus is regulated through the hypoxia-erythropoietin mechanism.

52. Erythropoietic inhibitors in plasma and urine. S. HALVORSEN, R. LINDEMANN, and P. SKJAELAAEN. *Rikshospitalet, Oslo, Norway.*

The existence of specific inhibitors of erythropoiesis (EIF) has been suggested by several authors. The demonstration of this inhibitor, suggests that both activators (ESF) and inhibitors (EIF) participate in the normal regulation of erythropoiesis. In this study the presence of EIF in urine and neonatal plasma has been investigated.

Urine from normal healthy persons, from patients with aplastic anemia, and from patients with severe anemia due to chronic renal failure was investigated. The urines were passed through a Sephadex column, and the different fractions were tested for stimulatory and inhibitory effect of erythropoiesis. Plasma from normal newborn babies was withdrawn on the first 4–6 days of life. Plasma from newborns with hyperbilirubinemia but normal hemoglobin levels was also used for the plasma studies. Erythropoiesis in exhypoxic polycythemic mice was either stimulated by erythropoietin injections or by a second hypoxic period. Saline and test material were given simultaneously with erythropoietin or before and after the second hypoxic period. The effect was measured as ^{59}Fe uptake in red blood cells.

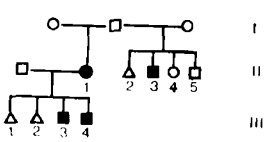
A marked inhibitory effect was found in the urine from normal healthy persons and from patients with aplastic anemia. In patients with chronic uremia a slight inhibitory effect and no active erythropoietin was found. The mice given neonatal plasma showed a marked reduction in iron uptake when the plasma was withdrawn between the 4th and 14th days of life.

The mode of action and the physiological role of EIF are unknown. EIF may be related to chalones. This is supported by the finding that EIF has the same molecular weight as reported for the chalones.

53. Dominant inheritance of congenital hypoplastic anemia. S. GARWICZ and N. W. SVENNINGSEN. *Univ. of Lund, Sweden.*

This paper is presenting the family history of a boy (*III-4*), who at the age of 2 months developed a typical picture of congenital hypoplastic anemia. His bone marrow showed 10.6% erythroblasts with predominance of young forms. Favorable response to corticosteroids was observed and at the age of 8 months the patient is doing well on small doses of prednisolone.

At the age of 2 months his older brother (*III-3*) showed a moderate anemia (lowest Hgb 7.9 g%), which subsided spontaneously at 7 months of age. Their mother (*II-1*) is herself the first case of Blackfan-Diamond anemia described in Europe 1939 by G. v. Sydow. She had been spenectomized at the age of 1½ year and later on showed a stationary course of the disease. During pregnancies her Hgb values were 7.8–8.7 g% without any blood transfusions. Her step-brother (*II-3*) developed a classical syndrome of congenital hypoplastic anemia at the age of 4 months. He was treated with blood transfusions and later on with corticosteroids. He died at the age of 12 and the autopsy showed generalized hemosiderosis. These step-siblings were described by Förare in 1963. According to available records the father of both step-siblings and his ancestors (mother, maternal uncle, and grandmother) had apparently had some kind of anemia. The family described indicates that dominant inheritance occurs in at least one type of hypoplastic anemia.



54. Binding capacity of human albumin for bilirubin. D. BRATLID, J. FOG, and S. O. LIE. *Rikshospitalet, Oslo, Norway.*

The binding between bilirubin and human serum albumin was studied spectrophotometrically and with Sephadex gel filtration. Spectral absorption curves of solutions of bilirubin in buffers containing decreasing amounts of albumin were registered. At a molar bilirubin to albumin ratio of 1:1 a change in these curves takes place, indicating that only one molecule of bilirubin is tightly bound to albumin. Sephadex gel filtration studies also showed that with solutions containing bilirubin and albumin in molar ratios above 1:1, bilirubin was retained on the column. A second molecule of bilirubin seemed, however, to be more loosely bound.

The toxic effect of bilirubin on human fibroblasts in tissue culture was also tested. When solutions containing bilirubin to albumin ratios above 1:1 were added to the growth medium, a toxic effect was seen on the fibroblast growth. With a bilirubin to albumin ratio of 2:1 rapid cell death was found with total bilirubin concentrations as low as 5 mg/100 ml. On the other hand, when the bilirubin to albumin ratio in the growth medium