ABSTRACTS

ERNST R. JAFFE, M.D., Editor

ABSTRACTERS

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ERYTHROCYTES


The above article is an extensive and authoritative review impossible to abstract or summarize. —C. R. M.


The paper outlines the clinical, genetic and laboratory features of so-called "black blood disease" (Hb Miwate disease) studied by the author and his collaborators during the past 20 years. The patients number 70 (31 males, 39 females), including 11 probable cases. The pedigrees show a typical autosomal dominant mode of inheritance with complete penetrance. No homozygous individual has been discovered. There are no apparent somatic disturbances, other than the abnormalities in the blood, and no appreciable reduction in viability or fertility. It is difficult to assume any selection pressure against the mutant gene. —K. F.


Beyond 15 years of age, patients with thalassemia major frequently have subnormal concentrations of serum calcium and/or magnesium, along with decreased urinary excretion of these cations. Erythrocyte content of magnesium was somewhat above normal, as was incorporation of magnesium into red cells. In patients with sickle cell anemia or hereditary spherocytosis, no consistent variations in calcium or magnesium levels were noted. —J. B. S.


The effects of treatment in a group of 224 patients in Manchester between 1944 and 1962 were analyzed. There was no significant difference between the survival rate of 107 patients treated with whole body x-ray therapy and radioactive phosphorus and that of 117 patients treated without radiotherapy. The causes of death were similar in the two series, except that death from hemorrhage, other than cerebral, occurred only in the nonirradiated group. There were no cases of leukemia in either group; this finding contrasts with recent reports showing a greater frequency of leukemia in patients treated with radiotherapy. —P. B.
FOLATE DEFICIENCY AND NEUROLOGICAL DISEASE.
H. C. Grant, A. V. Hoffbrand and D. G. Wells.

Among patients with peripheral neuropathy and/or myelopathy attending a neurologic hospital during a 1-year period, 10 were found to have megaloblastic erythropoiesis. Seven were deficient in folate, two had pernicious anemia and one, a vegan, had dietary B12 deficiency. Three folate-deficient patients had a peripheral neuropathy and folic acid therapy was followed by subjective and objective improvement. The remaining 4 patients had spastic paraplegia and folic acid therapy was ineffective. The authors felt that the neurologic syndrome in the folate-deficient patients was not necessarily the direct result of folate deficiency. The neurologic disease may have produced a state of malnutrition because of impaired appetite which led to deficient intake of both folate and another vitamin essential for nerve function.—P. B.

FOLIC ACID DEFICIENCY AND HEMOCHROMATOSIS.
R. A. MacDonald, R. S. Jones and G. S. Pechet.

This report follows a previous study in which the authors were able to produce hemochromatosis in rats by giving excess iron with a lipotrope-deficient diet. In this study, they showed that there was a folate acid deficiency and that folic acid supplements prevented parenchymal deposition of iron in pancreas and heart. The mechanism of this effect was not evident. Choline also prevented deposition of iron, possibly due to a folic acid-sparing effect. Other dietary supplements tested had no effect.—C. R. M.

From the University of Colorado Medical Center, Denver, Colo. Amer. J. Path. 47:89-123, 1965.

The authors studied 9 cases of hemochromatosis treated with multiple (up to 100) phlebotomies and they postulated that there are two abnormalities in classic hemochromatosis: excessive absorption of iron from a normal diet and abnormal handling of this excess iron with deposition in the peripheral parenchymal cells of the liver lobule. They felt that secondary (post-transfusion) hemochromatosis is quite different in nature. The article is a well-documented, carefully argued presentation which can be recommended strongly to those interested in the metabolic, hematologic or morphologic aspects of this disease.—C. R. M.


Serum iron concentration, iron-binding capacity and the degree of saturation were determined in 89 patients with thermal injury and in 25 healthy individuals. Iron metabolism was seriously disturbed by thermal injury. The serum iron level decreased promptly and significantly, often during the first 24 hours. The low level could not be raised by oral or parenteral iron treatment and remained unchanged until convalescence when it spontaneously returned to normal. The total iron-binding capacity also diminished in 3 to 4 days, but the reduction was usually less than that of the iron level. Iron-binding capacity generally remained low until the time of healing, but sometimes returned to normal more promptly than the serum iron. The degree of saturation was less than normal in 68 per cent of the examined cases; the iron level diminished at a greater rate than did the iron-binding capacity. Reduction of the iron level and of the iron-binding capacity were proportional in 25 per cent of the patients and the coefficient of saturation remained normal. This coefficient was higher than normal in 7 per cent. Dysfunction of iron metabolism could not be ascribed to infection or septic-toxic conditions because it developed early, before the period of septicemia. The observed phenomenon also occurs in association with infections, malignant growths and certain hematologic diseases.—S. R. H.
ABSTRACTS


Bilateral lumbar sympathectomy combined with simultaneous sciatic and femoral nerve resection has been found to precipitate trophic disturbances and anemia in rats, but not to aggravate these conditions. Studies with radioactive iron in animals with the affected limb placed in a plaster cast supplied evidence that bleeding from the area of impaired innervation did not in itself account for the development of anemia, but was capable of increasing its severity. In agreement with earlier findings, nerve resection failed to produce either trophic disturbances or anemia in previously adrenalecctomized rats. In such animals, fecal radioiron excretion was found to be practically the same as in control rats. Sciatic and femoral nerve resection in rats still in the stress-nonresponsive period was not followed by trophic disturbances or anemia. Following unilateral sciatic and femoral nerve resection, gastrocnemius muscle extracts of an intact and a denervated limb were studied for their immunochromatic behavior. Immunoelctrophoresis and double gel diffusion both showed that denervated muscle extract vs. homologous rabbit antisera developed a precipitin arc which was not seen with normal muscle extract. With immune serum absorbed by normal muscle extract, only the antigen of denervated muscle gave a precipitin line.—S. R. H.


With adenosine, but not glucose, cold stored swine and human erythrocytes generate and maintain normal levels of ATP, even when glycolysis is inhibited by fluoride. Notwithstanding, active sodium pumping is blocked in the presence of the inhibitor, possibly because fluoride also inhibits membrane ATPase activity which is known to be required for sodium extrusion. The author also presents evidence that lactate production from adenosine is only minimally slowed by fluoride ion in concentrations sufficient to block completely its formation from glucose. Lactate may be produced from nucleosides by a pathway not involving enolase.—H. S. J.

Comparative Carbohydrate Catabolism and Methemoglobin Reduction in Pig and Human Erythrocytes. S. E. Rickin and E. R. Simon.

Unlike most other mammalian red cells, pig erythrocytes contain no glucose, despite normal plasma glucose concentrations. During incubation of pig cells, consumption of glucose and production of lactate is one-tenth that of human cells, yet ATP levels, cation gradients, methemoglobin levels and glutathione content, which all depend on intact metabolism, do not differ significantly in the two cell types. The findings that lactate formation is similar in intact human and pig red cells with inosine as substrate and in hemolysates with glucose-6-phosphate suggest that glucose permeability or its phosphorylation is defective in pig red cells, at least in vitro. The possibility that pig cells utilize nucleosides, rather than glucose, as energy substrates in vivo remains for further study. (Abstracter's comment: With fluoride in concentrations of 20 mM., these authors completely inhibited lactate formation from inosine in pig erythrocytes, in contrast to the findings of Kirschner (the preceding abstract) of only minimal suppression of lactate generation from adenosine by 4 mM. fluoride.)—H. S. J.


Hemoglobin F and A synthesis was studied in suspensions of normal adult human bone marrow. Erythropoietin, added in vitro, stimulated total hemoglobin synthesis without affecting Hb F synthesis. Hypoxia depressed total globin synthesis without affecting Hb F synthesis. The synthesis of Hb A and F appeared to respond independently to environmental stimuli.—H. H. F.


Glycine-2-C14 was administered orally to a patient with chronic myeloid leukemia with se-
and in one case of iron deficiency anemia. In
level rose protein plasma filtrate indicated that the glycine
assumption that the red cells had a normal
plasia was observed in the patient with leukemia
cency anemia and achlorhydria. Erythroid hyper-
to two patients with iron deficiency anemia.
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fraction of stercobilin was estimated as 15.6 and
cases with iron deficiency anemia was normal.
showing an exponential initial utilization curve with
half a
lifespan. In iron deficiency anemia, the initial
18 to 25 per cent. Ineffective erythropoiesis in
which also serves as a form of quality control.—
A FULLY AUTOMATED SYSTEM FOR THE SIMUL-
C. R. M. Uhley, A. E. Lewis and G. R. Biskind. From Mount Zion Hospital, San Fran-
A simple device is described which feeds elec-
trical impulses into the Coulter counter. Once the
monitoring apparatus has been stabilized, it can be
used to provide a very rapid check on the
operation of the machine.—C. R. M.
A HEMATOLOGY CONTROL CHART. J. L. Penistan.
From Stratford General Hospital, Stratford,
Ontario, Canada. Amer. J. Clin. Path. 44:499-
A simple and ingenious nomogram for calculat-
ing mean corpuscular hemoglobin concentration
which also serves as a form of quality control.—C. R. M.
HEMOSTASIS
FUNCTIONAL AND ULTRASTRUCTURAL ABNORMALI-
TIES OF PLATELETS IN EHLERS-DANLOS SYM-
D. H. Kashihara, J. M. Riddle, J. P. Abra-
ham and B. Frame. From Henry Ford Hospital,
Studies of platelets in three patients and in four
children of one patient revealed functional and
ultrastructural abnormalities. The abnormal throm-
Roblastin generation test using patients' platelets
became normal after sonic oscillation, indicating
a normal content of platelet Factor 3, but subop-
tinal release. The abnormalities described may
contribute to the bleeding dyscrasia in this syn-
drome.—H. H. F.
EFFECT OF DIPYRIDAMOLE ON HUMAN PLATELET
BEHAVIOUR. P. R. Emmans, M. J. G. Harrison,
A. J. Honour and J. R. A. Mitchell. From the
Dipyridamole, a pyrimidopyrimidine compound,
inhibited thrombus formation in injured rabbit
vessels and, after intravenous injection, decreased
transiently the clumping activity of rabbit plate-
lets. The effect of the compound on human plate-
lets was, therefore, studied. Dipyridamole inhibited
the in vitro platelet-aggregating action of ADP
and enhanced the subsequent disaggregation. Intra-
venous injection (30-50 mg.) reduced the degree
of spontaneous clumping in stirred platelet rich
plasma. Similar results were found after oral
ingestion of 100-600 mg./day for 3 to 20 weeks.
A trial of the therapeutic effect of this agent in
occlusive vascular disease in man has been initi-
ed.—P. B.
THE EFFECT OF HYDROPHOBIC AND HYDROPHILIC
SURFACES ON THE ADHESION OF PLATELETS. S.
Szilontai and M. Csallókosi. From the Na-
The adhesive capacity of platelets was mea-
sured by adhesometers coated with substances
having hydrophilic (gelatin) and hydrophobic
(celloidin, silicone) properties. The adhesion of
platelets to hydrophilic surfaces was much more
intensive than to hydrophobic ones. Thus, it was
assumed that the process of coagulation is inde-
pendent of the adhesive capacity of platelets be-
cause blood does not clot for long periods in
either gelatin or silicone tubes.—S. R. H.
ABSTRACTS


Thrombocyte aggregation was studied in native and streptokinase-treated euglobulin rich in platelets. Platelets did not disintegrate on diluting the plasma with distilled water and acidification, but separated from plasma with euglobulin. These thrombocytes could be resuspended by dissolution of the euglobulin. The platelets contained an activator, as well as the proactivator. In model experiments, a correlation was demonstrated between the reduction of plasminoplastin activity and thrombocyte aggregation. On the basis of the evidence obtained, it was surmised that the plasmin system plays a role in white thrombus formation.—S. R. H.


The partial thromboplastin test was compared with and without the use of siliconized glassware and a refrigerated centrifuge. No significant differences were detected and other variables tested also showed little effect. Repeated tests on the same individual showed much less variation than did determinations on a number of different individuals. The test was capable of detecting (more than 3 S.D. above the mean for 40 normals) differences in 25 per cent of IX, 15 per cent of XI and 10 per cent of XII. “A normal test excludes a hemostatically inadequate level for these 4 factors.”—C. R. M.


In a patient with hereditary Factor VII deficiency (plasma level less than 4 per cent), an exchange transfusion (about 73 per cent efficient) raised the level to 100 per cent. The level fell to 50 per cent in just over 4 hours, to 20 per cent in just over 10 hours and to pretransfusion levels in 21 hours. Transfusion of 750 and 850 ml. of plasma previously had failed to raise the Factor VII level to the 20 per cent level considered minimal for major surgery. The biologically significant half-time of Factor VII is probably just over 4 hours and exchange transfusion has a place in the management of coagulation factor deficiencies of this type.—C. R. M.


The above article describes a turbidimetric method which is relatively simple and which is more accurate, particularly in the low range, than the salting-out technic commonly used.—C. R. M.


The dilute blood-clot lysis and euglobulin-lysis times showed a pronounced depression of fibrinolytic activity in pregnancy and a rapid return to nonpregnant levels in the puerperium. Plasminogen levels were unchanged. The authors postulated an inhibition of fibrinolytic activity in pregnancy which may be associated with the levels of circulating progesterone and estrogen.—P. B.


The electron microscopic studies confirm the importance of the R. E. system in clearing rabbit blood of the small fibrin shreds which result from intravenous injection of thrombin or endotoxin. This mechanism is probably also operative in man, but it is not as essential as in the rabbit where the fibrinolytic system is not as effective as in man.—C. R. M.

LEUKOCYTES

The author summarizes the biochemical studies of normal circulating mammalian white blood cells and malignant human leukocytes. Specific sections deal with leukocyte respiration, carbohydrate, protein, nucleic acid and lipid metabolism, vitamins and coenzymes, water and electrolytes, zinc, alkaline and acid phosphatases, catalase and peroxidase, miscellaneous enzyme systems and metabolic functions. Morphologically different types of normal white blood cells are each distinctive in their enzymic constituents and in several features of their metabolism. Whenever enzymes from normal and malignant leukocytes have been isolated and characterized, they have been found to be identical; the observed differences in levels of activity must, therefore, reflect variation in cellular control mechanisms. Circulating leukocytes are of special interest because they represent a readily available tissue for biopsy and one which may be obtained free of blood vessels, connective tissue and other encumbering elements which ordinarily make biochemical characterization of a tissue so difficult.—T. E. B.


The peripheral lymphocytes of rabbits stimulated in vitro with these agents synthesize protein, RNA and DNA. All four stimulants provoke the same sequence of events: protein formation, followed after 24 hours by RNA synthesis and histologic blast transformation, with DNA synthesis and mitoses occurring by 48 hours. Stimulated cells synthesize little, if any, gamma globulin (IgG). It is suggested that the majority of products synthesized by stimulated cells are ultimately related to the capacity of these cells to divide.—T. E. B.


Using differential centrifugation, several fractions (nuclear, mitochondrial, 7000xg pellet, granular, supernatant) were obtained from horse leukocyte homogenates. The highest activities of alkaline phosphatase and lysozyme were demonstrated in the neutrophilic granular fraction and of acid hydrolases, such as acid phosphatase, ribonuclease and protease, in the fraction of heavier granules (7000xg pellet and mitochondrial fraction). Although acid phosphatase was barely activated by physicochemical treatments (freezing-thawing, acid media), lysozyme was readily liberated into the supernatant by these procedures. Such dissimilar release patterns may reflect differences in the extent to which the enzymes are structure-bound. Different kinds of particles present in leukocytes may be concerned in phagocytic processes to a different degree.—K. F.


Polymorphonuclear leukocytes synthesize fat and utilize fat as a source of energy. In the present study, homogenates of rabbit polymorphonuclear leukocytes harvested from peritoneal exudates were found to hydrolyze triglyceride in chylomicra obtained from human thoracic duct lymph. Release of fatty acid was greatest at pH 4.8. Almost half of the total triglyceride-splitting activity occurred in association with the granules (lysosomes) of the leukocytes.—T. E. B.


Intradermal injection of as few as 5.6 x 10^6 intact leukocytes made the human recipient hypersensitive to skin homografts obtained from the leukocyte donor. Leukocytes which had been repeatedly frozen and thawed and then treated with DNase were still able to induce homograft sensitivity. Separation of leukocyte components by differential centrifugation yielded particulate cell-free fractions which retained the ability to sensitize human recipients to skin homografts. These fractions included the mitochondrial-granular, microsome-rich, and fibrillar fractions, all of which seemed about equally potent as transplantation antigens. The particle-free residue of leukocyte cytoplasm was not able to induce homograft sensitivity.—T. E. B.
ABSTRACTS


Peripheral blood leukocyte cultures were obtained from patients with Hodgkin's disease. Their lymphocytes showed a markedly diminished transformation response to stimulation with phytohemagglutinin and vaccinia virus. In unstimulated cultures, the lymphocytes from patients showed decreased survival when compared to cells from control subjects. The diminished lymphocyte transformation seemed to correlate with anergy to delayed hypersensitivity antigens and with the extent of disease present. It was suggested that lymphocytes from patients with Hodgkin's disease are abnormal or damaged.—T. E. B.


The authors tested the effect on the aging process of grafting across a weak histocompatibility locus in C3H mice. In the test animals, H 1<sup>+</sup> spleen cells were injected intracardiac into neonatal H 1<sup>+</sup> mice. There was no observable runt disease. The controls were H 1<sup>+</sup> neonates similarly injected with adult H 1<sup>+</sup> cells. After one year, there was a markedly increased incidence of lymphoma among the test animals, 14 of 23 animals dying from this cause. Among the controls, 13 of 32 died of an apparently identical lymphoma. The spontaneous lymphoma rate in this strain has been very low. Among males not showing lymphoma, the mean age at death was 106 weeks in test animals and 122 weeks in controls. Females could not be included in the evaluation because of the high incidence of mammary carcinoma in both groups which killed them at a comparatively early age. Both the early deaths and the lymphomas may have been due to the effect of the graft, requiring a postulate that there was some incompatibility of very minor degree between the H 1<sup>+</sup> donor and the H 1<sup>+</sup> neonates. The authors are repeating this work with multiple genetic combinations.—C. R. M.


The author looked for chromosome abnormalities in 13 patients with myeloproliferative syndromes and in 10 with intractable anemia, leukopenia or pancytopenia. Five of 7 who showed changes died of leukemia within 3 months, while only 2 of 13 without changes developed leukemia. There seemed to be no pattern to the changes and irradiation with P<sup>32</sup> also produced abnormalities. The prognostic value was limited and larger numbers followed for longer periods will be needed.—C. R. M.


Changes seen in the bone marrows of 92 acute leukemia patients receiving chemotherapy were described. Red cell abnormalities were seen more commonly than were myeloid element changes. The authors discussed, with excellent photomicrographs, some of the differential diagnostic problems which can be caused by chemotherapy.—C. R. M.


Almost a third of 285 children with acute leukemia developed CNS disease at some time between 3 and 42 months after diagnosis. The mean duration before appearance of this complication was 14.5 months. In the majority of patients, neurologic involvement appeared before the first bone marrow relapse. Headache, vomiting and papilledema were the most prominent clinical manifestations. The usual therapy was intrathecal aminopterin, 0.1 mg. per Kg. every other day until the number of white cells in the CSF fell below 10/mm.<sup>3</sup>. An average of 4 injections was needed to achieve this result and the mean duration of remission was 5.9 months. Approximately half the patients had 2 or more episodes of CNS involvement; in none did resistance to aminopterin develop. Radiation therapy was reserved for cases of apparent nonmeningeal involvement.—J. B. S.

LYMPHOCYTE R. N. A. METABOLISM. COMPARISON BETWEEN ANTIGEN AND PHYTOHAEAGGLUTININ STIMULATION. N. L. Cooper and A. D. Rubin.
eluded that the responses elicited by PHA and by specific antigens may differ at the biochemical level, despite the similarity in the resultant morphologic changes.—P. B.


Cell labeling was affected by various physical and chemical factors, including incubation temperature (optimal labeling was achieved at about 37 C.), the size of the exogenous thymidine pool present, the specific activity of the label and the exposure period of the autoradiographs.—T. E. B.


Homogenized peripheral leukocytes from untreated patients with chronic myelocytic leukemia have more S-adenosylmethionine (SAMe), an important donor of methyl groups in transmethylation reactions, than do peripheral white cells from normal subjects. The SAMe elevations may be simply an indicator of cellular immaturity, but no correlation could be shown between SAMe content and the degree of immaturity of leukocytes. Methyl transfer is important in synthesis of the methylated pyrimidine, thymine. Methylation antinutrients might be useful in the treatment of chronic myelocytic leukemia. Agents such as pyrogallol and pargyline are known to be able to lower strikingly the amounts of SAMe in rat tissues.—T. E. B.


Normal leukocytes, grown in short-term cultures containing plasma from leukemic patients in relapse, demonstrated significantly increased mitotic activity. White cells cultured in normal plasma or in plasma from leukemic subjects in remission showed essentially no mitotic activity. —J. B. S.


Mitotic activity was estimated from the rates of incorporation of C14-thymine or formate in vitro. Distribution of activity among different cell types was determined by quantitative autoradiography. In myeloid elements of bone marrow incubated in serum obtained from leukopenic rabbits, activity was already increased at the myeloblast level and was significantly greater throughout the entire myeloid series when compared with cells incubated in control serum. Activity decreased in the entire myeloid series on incubation with sera obtained at the maximum of leukocytosis. As opposed to data in the literature, ethylpropietin had no influence on the mitotic activity of the myeloid series and 200μg./ml. of Menkin’s leukocytes promoting factor was ineffective.—S. R. H.


Forty-two cases of the disease, including 12 with γ2-type, 2 with γ1A, 10 with γμ, 10 with γ2 + γμ and 8 with γ1A + γμ, were examined. Morphologic observations were made chiefly by a cytometric method. There was no significant morphologic difference among the types. In γ1A-type, there was a high incidence of cells with larger nuclear areas and the nucleoli were larger than in γ2-type. There was a marked variation in the mean nucleus/cell ratio in γμ-type in which cells of small nuclear area appeared with greater frequency. Some cases of this type had many cells with cytoplasm area smaller than that of normal plasma cells. Many cases of γμ-type were similar to γ2-type in the area of nucleoli. Marked anisocytosis was, however, observed among the γμ-type and areas similar to those of the γ1A-type were observed. The γ2 + γμ type had the same cytometric findings as γ2-type and γ1A + γμ-type was approximately the same as γ1A-type. The relationship between the morphologic features of
myeloma cells and the immunoelectrophoretic patterns of myeloma proteins was discussed.—K. F.


The authors assume that young, immature plasma cells are capable of facultative phagocytosis, if the material to be phagocytized enters the organism in excessive amounts. Mature plasma cells do not seem to phagocytize at all.—S. R. H.


Histochemical and electron microscopic studies, performed on two patients with Waldenstrom’s macroglobulinemia, revealed crystalline protein in bone marrow cells. The authors concluded that these cells were modified reticulum cells which may have been unable to discharge the protein they formed. The differences between these cells and protein-forming cells in multiple myeloma were discussed.—C. R. M.


A simple method is described for obtaining relatively pure fields of leukocytes. The basis of the method: glutaraldehyde causes plasma to solidify into a firm substance which can be cut into small pieces and handled as blocks of tissue. Centrifuged blood from which most of the plasma has been removed is fixed in situ. A disk of leukocytes embedded in solidified plasma can be removed with only a thin layer of erythrocytes adhering. The use of glutaraldehyde offers the additional advantages of good preservation and the opportunity to store the specimen in fixative for an indefinite period until a time convenient for further processing.—T. E. B.

**MISCELLANEOUS**


Infants with congenital syphilis diagnosed during the first month of life frequently demonstrated hepatosplenomegaly, anemia and jaundice. During the first week, reticulocytosis and normoblastosis were present, as was thrombocytopenia. Significant leukocytosis was seen in several infants, along with a “shift to the left.” Jaundice persisted for an average of 13 days; the hyperbilirubinemia was both direct and indirect reacting.—J. B. S.


A letter survey was undertaken. Although a small number of infants appeared to respond when vitamin B12 was used as the sole therapeutic agent, in general, the response among patients treated with B12, with or without radiation therapy, was essentially the same as that described for patients with neuroblastoma in whom B12 was not employed.—J. B. S.


The authors studied 119 cases of leukocytheroblastosis in adults and confirmed that this finding was by no means pathognomonic of bone marrow infiltration. Only 54 per cent of their cases showed infiltration. Leukocytheroblastosis was found in 3 per cent of consecutive admissions for “infection” and in 7 per cent of admissions for “bleeding.” The criteria for diagnosis were the presence of nucleated red cells and of “myeloid precursors,” but they were not defined further.—C. R. M.


A fairly precise and consistent relationship between the serum concentration of beta 1c globulin and the serum complement titer was demonstrated. The normal beta 1c globulin level was found to range between 130 and 155 mg./100 ml. When the level fell below 80 mg./100 ml., a significant drop in complement titer was seen. Among patients with hereditary angioneurotic edema and
in a patient with an isolated C2 deficiency, decreased serum complement titers were found, despite normal levels of beta 1C globulin. Acute nephritis consistently was characterized by low levels of both serum beta 1C globulin and complement titers and the step-wise addition of beta 1C globulin to the serum of a nephritic patient resulted in a proportional increase in the complement titer.—J. B. S.


Synthetic copolymers of two amino acids (glutamic acid and lysine, 60:40) were not antigenic in mice. If, however, a small amount of a third amino acid, alanine, was added, then the immune response to this material, glu$_2$lys$_3$ala$_5$ (GLA$_5$), appeared to be genetically controlled. When random-hired Swiss mice were immunized with GLA$_5$, 47 per cent responded, as determined by passive red cell hemagglutination. The offspring of nonresponder animals were entirely nonresponsible. The offspring of responder mice showed a high frequency of response (>70 per cent). Seven inbred strains of mice were also immunized with GLA$_5$. Three of the 7 strains responded; all the animals of the responder strains had an immune response and none of the animals of the nonresponder strains had an immune response. (Abstractor’s note: These studies clearly indicate and support an increasing body of evidence that the immune response to simple antigens is under genetic control. The immune response to more complicated antigens also may be under genetic control.)—I. G.


Since the introduction of electron microscopy, many investigators have observed the presence of cilia in different types of cells which previously were not suspected to possess them. During the study of the effect of x-irradiation on rat spleen, cilia attached to reticular cells were observed in both normal and irradiated rats. The cilia appeared similar to those in other cells. Their significance is unknown, although it was thought that they may represent embryological remnants without function.—O. P. J.

**Haptoglobin Level of Blood Serum in Different Phases of Silicosis.** J. Haber, J. Simon and E. Horváth. From the County TB Hospital, Pecs, Hungary. Orv. Hetil. 106:204, 1965.

Mean haptoglobin values showed significant alterations in all three phases of silicosis. With progression of disease, progressively higher values were obtained. The highest values were found in cases where silicosis was associated with tuberculosis.—S. R. H.


The above article is an excellent account of a new technic for identification of Bence-Jones protein and for its differentiation from uroglubulins. The technic involves filter-paper drying of precipitated proteins and specific extraction of Bence-Jones protein by hot NaCl-acetate, pH 4.3, buffer. The technic seems to be both sensitive and specific.—C. R. M.


The authors described 5 cases, two of which were originally reported as "lipoid proteinosis" which produces similar skin changes. All showed pigmentation of the liver; in four there were coarse clumps related to the areas of fluorescence and in the fifth it was more diffuse. Fluorescence was demonstrated only very transiently with conventional UV light sources, but an iodine tungsten Quartz source permitted both careful examination and photography. Quantitative analyses showed marked increases in protoporphyrin levels in red cells, feces, liver and gallstones, but not in urine. Coproporphyrin was also increased in erythrocytes, but not constantly in the feces.—C. R. M.