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FOLIC ACID and VITAMIN B₁₂


When vitamin B₁₂ is hydrogenated with platinum as catalyst, its red color disappears but can be restored upon shaking with air. In spite of the restoration of the color, the product possesses only a small fraction of the original microbiologic activity. This substance is vitamin B₁₂a. Using reducing agents such as cysteine hydrochloride, ascobic acid and thiamine hydrochloride, the authors demonstrated a similar loss of microbiologic activity if vitamin B₁₂ was incubated with these substances under controlled conditions for seven days at 37°C. This loss of microbiologic activity is attributed to the reducing power of these agents, but is not necessarily related to the disappearance of the intensity of the red color, and the AFB₁₂ activity was not affected to an equal extent. - RBC.


The administration of sulfasuxidine eliminates the growth response produced by vitamin C in the chick, but no effect is observed on the growth response to vitamin B₁₂, if other B vitamins are present. The administration of sulfasuxidine to a semi-purified ration eliminates the increase of PGA liver storage produced by vitamin C. Both vitamin C and B₁₂ raise the cecal accumulation of PGA in the chick. The administration of sulfasuxidine lowers the cecal levels of PGA to a minimum in all cases but has no effect on the cecal content of vitamin B₁₂. Vitamin C, when injected, has no effect on the growth, liver storage or cecal concentration of PGA in the chick. The injection of PGA markedly increased the liver storage and cecal levels of both PGA and vitamin B₁₂. - RBC.


Minute amounts of aminopterin inhibit the development of the chick embryo. This inhibition can be partially alleviated by thymidine and more effectively by thymidine plus hypoxanthine deoxyriboside but not by folic acid or vitamin B₁₂. It is postulated that aminopterin inhibited the synthesis of thymidine and deoxyribosides by the embryo. Added deoxyribosides counteracted the inhibitory action of aminopterin. Aminopterin acts as an antifolic acid. Leucosnoctoc citrovorum factor (CF), apparently a metabolically active form of folic acid, has been observed to counteract the aminopterin inhibition
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of Leuconostoc citrovorum and in larger amounts to counteract partially the inhibitory action of aminopterin for the chick embryo. Folic acid and formyl-folic acid were ineffective or only slightly effective under similar conditions. Thymidine and hypoxanthine deoxyribose also partially counteract the inhibitory effects of aminopterin on the growth of chick embryos. On the basis of these observations, the authors suggest that conversion of folic acid to citrovorum factor is a necessary preliminary to the catalytic action of the folic acid, that synthesis of thymidine and purine deoxyribosides are among the synthetic reactions for which CF (or folic acid) is required, and that these synthetic reactions are those inhibited by small amounts of aminopterin.—R.B.C.

IRON METABOLISM


In the literature there has been postulated a mechanism whereby the gastro-intestinal mucosa regulates the amount of iron absorbed from the intestine. Hahn and Granick have suggested that ferritin and apoferritin of the mucosa are concerned in this process. The protein apoferritin combines with ferric iron to form ferritin until the apoferritin is saturated. At this point an equilibrium state exists between the ferric iron in ferritin and the ferrous iron. The prevention of further absorption of iron from the intestine occurs when the apoferritin is saturated with ferric iron, the so-called “mucosal block.” In the present investigation, the total ferritin in the intestine and mesenteric lymph nodes of the horse was determined by an immuno-chemical technic, following the ingestion of iron. The values were determined similarly in a control horse. Ferritin was found in the first 11.5 feet of intestine of the control horse as well as in the last 3 feet, with small amounts in the lymph nodes. If iron was fed, there was a notable increase in the ferritin in the first 2.5 feet of intestine after twenty-four hours, while forty-eight hours after feeding the same amount of iron there was a notable increase in the first 11.5 feet and the last 3 feet of the intestines. The mesenteric lymph nodes showed a fourfold increase over the control in twenty-four hours and a fivefold increase in forty-eight hours. It appears that ferritin is involved in the phenomenon of iron absorption through the intestine of the horse and that the lymphatic system is also involved.—R.B.C.


In a study of the plasma iron level of 19 adult male subjects, these investigators observed a regular diurnal variation. Plasma iron was determined by a modification of the method of Barkan and Walker. It was found that the level of iron was highest in the morning and that it falls during the day to its lowest level in the evening, and rises again during sleep. Similar observations appear elsewhere in the literature with only a few exceptions. The mechanism of this diurnal variation is not apparent. It appears to be independent of the initial plasma iron level and does not appear to be related to muscle activity. The possibility has been suggested that it may be related to adrenal cortical function, but the authors cite evidence that they feel makes this explanation unlikely.—R.B.C.

Changes in the Mucous Membranes in Iron Deficiency. J. Flusser, V. Chojaková, V. Stašek, M. Škach, J. Žabka and J. Balík. From the third Medical Clinic, the Radiologic Clinic, the second Stomatologic Clinic, the Otolaryngologic Clinic and the first Ophthalmologic Clinic, Charles University Prague. Čas. lék., čes. 89: 1410, 1950.

The authors consider that the similarity of the changes in the mucous membranes in iron deficiency and vitamin B complex deficiency can be explained by presupposing that they have similar metabolic functions in the enzyme system. They emphasize that general and
local lesions of the mucous membranes which can be cured by iron therapy occur in the absence of anemia (local sideropenia of Waldenström, tissue anemia of Vanotti).

A report is given of the clinical findings in 20 cases and the evidence of sideropenia in the individual mucous membranes is charted. One case of local sideropenia is described in detail. The importance of taking a careful history is emphasized and the special x-ray technic for the diagnosis of iron deficiency dysphagia discussed. The underlying anatomical changes are noted.

The authors have seen the same x-ray changes as are found in iron deficiency dysphagia in idiopathic xerostomia (Sjögren syndrome). A fundamental symptom of this syndrome is a long continued disturbance in the secretion of saliva. A longstanding disturbance in the secretion of saliva leads to disorders of the mucous membrane which are similar to those found in iron deficiency and certain types of vitamin B complex deficiency (salivary syndrome). The clinical similarity between this salivary syndrome and between the changes in iron deficiency and deficiency of the vitamin B complex can be explained as follows:

The vitamin B complex and iron are extrinsic factors of a complex enzyme which is required for the normal functioning of the upper part of the alimentary tract. The intrinsic factor of the enzyme is found in saliva. The authors apply the term “dysdigestive syndrome” to this syndrome (atomaticis angularis, glossitis, dysphagia, gastritis hypacida). In conclusion, they discuss the relation between the “dysdigestive syndrome” and the Plummer-Vinson syndrome and carcinogenesis.—M.N.

POLYCYTHEMIA VERA

THE TREATMENT OF POLYCYTHEMIA VERA WITH RADIOACTIVE PHOSPHORUS. B. K. Weiseman, R. J. Rohn, B. A. Bouroncle and W. G. Myers. From the Department of Medicine, College of Medicine, The Ohio State University, Columbus, Ohio. Ann. Int. Med. 34: 311-330, 1951.

This is a well thought out paper presenting in detail the technical factors in the use of P32 and attempting to compare the results of such treatment with other therapeutic measures.—P.F.W.

BLOOD VOLUME IN POLYCYTHEMIA AS DETERMINED BY P32 LABELED RED BLOOD CELLS. Y. I. Berlin, J. H. Lawrence and J. Gartland. From the Donner Laboratory of Medical Physics, the Radiation Laboratory and the Department of Physics, University of California, Berkeley, Calif. Am. J. Med. 9: 747-751, 1950.

Blood volume determinations using P32 labeled red cells were made in 53 patients with polycythemia vera, in 6 with secondary polycythemia and in 7 with relative polycythemia. In general those patients with polycythemia vera in relapse and those with secondary polycythemia showed an elevated hematocrit, increased total red cell volume and a low plasma volume. Patients with relative polycythemia, on the other hand, had normal total red cell volumes but high hematocrits as the result of low plasma volumes. Blood volume determination is, therefore, of value in differentiating absolute from relative polycythemias but of no help in the differential diagnosis of polycythemia vera and secondary polycythemia. The hematocrit was shown to be a most unreliable index of total red cell volume, thereby emphasizing the value of blood volume determinations in the therapeutic management of patients with polycythemia vera. A direct correlation was found between the increase in circulating red cell mass and the total number of circulating white cells in polycythemia vera.—H.W.B.

THE CIRCULATING RED CELL MASS IN POLYCYTHEMIA VERA AS DETERMINED BY RED BLOOD CELLS TAGGED WITH THE RADIOACTIVE ISOTOPE OF IRON. P. F. Hahn, E. B. Wells and G. R. Meneely. From The Cancer Research Laboratories, Meharry Medical College, the Department of Medicine, Vanderbilt University School of Medicine, and the Radioisotope Unit of the Thayer Veterans Administration Hospital, Nashville, Tenn. South. M. J. 48: 947-950, 1950.

The circulating red cell mass in two patients with polycythemia vera was determined
using donor cells tagged with Fe$^{59}$. In both instances the total red cell mass far exceeded that amount calculated on a basis of body weight and venous hematocrit. As is pointed out, failure to appreciate the fact that the hematocrit does not accurately reflect the circulating red cell mass in certain pathologic states may lead to poor therapeutic results. More specifically, if the hematocrit is used as the sole guide in the treatment of polycythemia vera by phlebotomy, the patient very likely will be undertreated as the amounts of blood withdrawn will be too small to produce a satisfactory clinical response.

A more rational approach to treatment of this disease has been made by employment of blood volume determinations which have become simplified and more accurate with the institution of methods employing several of the radioactive isotopes.

In general the authors favor the use of phlebotomy in the treatment of most cases of polycythemia vera. The disadvantages of other therapeutic measures such as radiation and phenylhydrazine are discussed.—H.W.B.

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**BLOOD VOLUME**

*The Use of Radioactive Iodinated Plasma Protein in the Study of Blood Volume.*


A method of determining plasma volume which utilizes protein (human plasma or serum albumin) tagged with radioactive iodine is described. Iodinated labeled protein is injected intravenously and its dilution determined by measuring the radioactivity before injection and that of the plasma periodically thereafter. Studies on 76 human subjects are reported. In 30 individuals the rate of disappearance of iodinated protein from the blood was determined; in 31 patients plasma volume studies were carried out under basal conditions and in 15 persons simultaneous plasma volume determinations with radioactive iodinated protein and T-1824 dye were compared. Additional experimental procedures were undertaken in animals and humans to investigate the fate of the iodinated protein in vivo.

It would appear, from the results of these various studies, that this method has certain practical advantages. It is simple to perform and the test substance utilizes a normal constituent of plasma. The iodinated protein disappears from the blood stream at a reasonably fixed slow rate with minimal initial loss (less than with T-1824). Repeated blood volume determinations can be performed after short intervals in the same individual.—H.W.B.

**Influence of Blood Incompatibilities on Measurement of Blood Volume by Cell-Tagging Methods.**


A study of the blood volume of the dog as measured simultaneously by the dye T-1824, by carbon monoxide and by radioactive iron, Fe$^{59}$, has shown that the values measured by cell-tagging methods are distinctly lower than the value given by the dye method whenever the donor blood tagged with CO or Fe$^{59}$ shows incompatibility with the recipient animal. If no incompatibility is observed, the values by the three methods agree closely. It is suggested that cell clumpings occurring in the reaction of incompatibility, by making the smaller vessels inaccessible to the clumped cells, reduce the volume measured by the tagged cells.—R.B.C.

**LEUKOCYTES**

**Prevention of Hormonal Eosinopenia and Lymphopenia by Inhibition of Clotting in Blood. Preliminary Report.**


In four experiments in man and three in dogs, inhibition of blood clotting by heparin prevented or diminished the usual eosinopenia and lymphopenia which results from in-
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Injection of ACTH, adrenal cortisone or insulin. In 3 dogs heparin alone without the eosinophile hormone caused a significant rise in eosinophils. A detailed report and discussion of this work is to be published.—S.T.C.

RELATIONS OF THE FUNCTION OF GRANULOCYTES TO THEIR ELECTRIC SURFACE CHARGE.
Eugen Fritze. From the Medical Clinic, University of Göttingen (Germany). Acta haemat. 4: 351–357, 1930.

Based upon physical laws and experimental analysis of the electric charge of the cellular surface it seems probable that the emigration of granulocytes to the area of inflammation, their ameboid movement, the phagocytic power and their tendency to aggregation depends upon the electric charge and the surface tension of the cells. Measurements have been made by cataphoresis.—C.M.

EOSINOPHIL AND OTHER LEUCOCYTE CHANGES IN BURNED PATIENTS WITH SPECIAL REFERENCE TO ADRENOCORTICAL ACTIVITY.

The change in eosinophil count in 35 patients and in the lymphocyte and neutrophil counts in 18 patients with burns of various degrees of severity were studied. Eosinopenia was found soon after burning and tended to be more prolonged the more extensive the burns. The eosinopenia was often accompanied by a lymphopenia and neutrophile leucytosis. The relationship of these blood changes to adrenocortical activity is discussed and the suggestion made that premature rise of eosinophils may indicate adrenocortical failure.—S.T.C.

SULPHHYDRL CONTENT OF BLOOD CELLS IN DYSCRASIAS.

The authors have reviewed the subject of sulphhydrl (—SH) compounds including glutathione (GSH). A method is described for the determination of GSH in whole blood, erythrocytes and leukocytes. It is unfortunate that more data are not given concerning the separation of erythrocytes from leukocytes. The conclusion is reached that white cells of patients with leukemia contain larger amounts of —SH containing substances than the white cells of normal persons, and it is suggested that the —SH content of white cells in leukemia may be of prognostic significance.—T.R.T., Jr.

RELATIONSHIP OF BONE MARROW PLASMACYTOSIS TO THE CHANGES IN SERUM GAMMA GLOBULIN IN RHEUMATIC FEVER.

Sternal marrow aspiration studies and simultaneous determinations of serum gamma globulin levels were performed in normal children and in children in various stages of rheumatic fever, chorea and streptococcal pharyngitis. Serial determinations were obtained in a number of the rheumatic children.

The patients with acute rheumatic fever and those convalescent from streptococcal pharyngitis consistently showed marrow plasmacytosis and elevation of serum gamma globulin. Furthermore, the correlation between the magnitude of this hypergamma globulinemia and the degree of plasmacytosis was close. The normal children and those with inactive rheumatic fever and with chorea, on the other hand, exhibited normal numbers of plasma cells in the marrow as well as normal levels of serum gamma globulin. A differential study of the type of marrow plasmacytes found in the various groups was made and discussed.

Comment is made on the relationship of the plasma cell to antibody and gamma globulin
production. Although much is perhaps speculative, this data adds further support to the concept of active plasma cell participation in immunity and supports, inferentially at least, the streptococcal theory of the etiology of rheumatic fever. One further laboratory differentiation between chorea and acute rheumatic fever is pointed out in this study.—H.W.B.

PLASMACYTOMAS AND HYPERGLOBULINEMIA AS MANIFESTATIONS OF HYPERSENSITIVITY. A
POSTMORTEM STUDY OF TWO CASES WITH HYPERSENSITIVITY PROBABLY TO SULFADIAZINE.
T. Robertson. From the Department of Pathology, The New York Hospital, Cornell

Two cases of probable hypersensitivity to sulfadiazine are reported which showed extensive plasmacytosis at autopsy in addition to the more commonly found lesions of hepatitis, interstitial nephritis, etc. It was thought that the relatively long duration of illness in these patients, e.g., nineteen days and six months, respectively, after the onset of symptoms, might explain in part at least this unusual histologic feature. The second and more chronic case, in which the plasma cells were more mature, exhibited a marked hyperglobulinemia. The difficulty which may be encountered in differentiation between plasma cell myeloma and diffuse plasma cell infiltration, as seen in one of these cases, can be real and is worthy of appreciation.

Experimental and clinical data concerning the relationship between hypersensitivity, hyperglobulinemia and plasmacytosis is reviewed briefly. The problem of the nature of the plasma cell and its immunologic significance is an intriguing one and about which relatively little is known.—H.W.B.


The author describes a new kind of lymphocyte with a spindle-like appearance which is caused by protoplasmatous outgrowth. If these cells exceed 5 per cent of the leukocytes, an endocrine disorder of the body is assumed.—C.M.

UNSUCCESSFUL EXSANGUINATION TRANSFUSION IN ACUTE LEUKEMIA OF CHILDREN. J. Janeček
and Z. Hlošek. From the second Pediatric Clinic; Charles University, Praha. Čas.
lék. čes. 89: 1291, 1950.

As a result of the experience obtained in making exsanguination transfusions in 10 cases of paramyeloblastic and micromyeloblastic leukemia in children the authors are not able to recommend this method of treatment. The remissions were only short and the results were not improved by the use of fresh blood or by the repetition of the process.—M.X.

BLOOD COAGULATION and HEMORRHAGIC DISEASE

COAGULATION DEFECTS WITH INTRAUTERINE DEATH FROM RH ISOSENSITIZATION. A. E.
Weiner, D. E. Reid, C. C. Ruby and L. K. Diamond. From the Department of Obstetrics,
Harvard Medical School and Boston Lying-In Hospital, Boston, Mass. Am. J. Obst. &

It was noted by the authors that certain sensitized Rh-negative patients carrying a
dead fetus may develop a coagulation defect which may produce severe prepartum and
postpartum hemorrhage. Studies of the coagulation mechanisms in 15 such patients revealed
antithrombocytopenia in 3 patients associated with marked hemorrhage manifestations. The
coagulation mechanism was normal in 12 patients and the amount of blood lost at delivery
in these patients was not unusual. It was found that the diagnosis of antithrombocytopenia
could be made while the patient was asymptomatic prior to the onset of labor. A critical reduction
in blood fibrinogen concentration can be demonstrated by the absence of a clot or a marked
decrease in the size and stability of the clot formed by a few cubic centimeters of freshly
drawn venous blood. If such a defect is present, fibrinogen replacement (6000 mg.) restores
earability of blood in the test tube and in the patient. If hysterectomy is indicated in an
A fibrinogenemia patient, it should be delayed until the coagulation mechanism has been restored—R.B.C.


A brief review of the family history, clinical and laboratory findings in hemophilia is given, reference being made to the usual prolonged coagulation time, the deficient prothrombin consumption and the inability to correct the defect in known hemophilic blood. Details are given of eight families in which the coagulation time of affected members was normal or near normal. It was found that this feature was relatively constant on repeated testing. There was, however, no doubt that they were true cases of hemophilia both clinically and also because the bloods were poor at shortening the calcium time and correcting the prothrombin consumption defect of known hemophilic blood.—S.T.C.

Acute Thrombopenic Purpura Associated with Administration of Propylthiouracil.

A 50 year old man, who had been under propylthiouracil treatment for six weeks, was hospitalized because of chills, fever and low abdominal pain. There was no evidence for a hemorrhagic diathesis and, although no platelet estimation was done, the bleeding time was normal. On a diagnosis of appendiceal abscess, penicillin was given (duration not stated). After eight days in the hospital—it is not stated whether propylthiouracil was given in the hospital, presumably it was not—there was the sudden appearance of a marked bleeding tendency: generalized petechial eruption, bloody urine and bloody stools. At the same time, the bleeding time was greatly prolonged (over 30 minutes), the coagulation time being normal. The prothrombin time was normal.

"No platelets were seen in the peripheral blood smears." Blood transfusions and vitamin K preparations were given, and there was gradual improvement. No platelets were seen on blood smears for nine days after start of the hemorrhagic episodes, and no numerical estimations are given until sixteen days after the start of the episode (65,000 per cu.mm.), after which they gradually rose toward normal. Three months after initial hospitalization, the patient was well and the blood studies and bleeding time were normal. The only bone marrow puncture was done after recovery, and was normal.

The cause for this sudden hemorrhagic diathesis is certainly not clear, although presumptively it was thrombocytopenia in origin, and possibly the thrombocytopenia was related to the propylthiouracil administration several weeks before. Since the data are sparse, and the evidence entirely indirect, this "first instance of thrombocytopenia during propylthiouracil therapy" cannot be accepted as related to the drug.—S.E.


This is an interesting report of a young girl with thyrotoxicosis who developed hypoprothrombinemia while receiving propylthiouracil. She responded well to fresh normal serum and blood. The authors conclude that accelerator globulin was the main deficiency. No associated hepatic or hematologic disturbances were detected.—P.F.W.


These authors define "increased capillary fragility" as a condition when chemical lesions in the capillary wall are apparent. They feel that the pore size of capillaries is dependent upon intercellular cement located between endothelial cells and further upon adsorbed serum protein which effectively reduces the area of pore through which filtration may occur.
Displacement of the adsorbed serum protein by other molecules of small diameter may result in an increase in pore size and a consequent injury to the capillary wall. It has been shown that the administration of leukotoxine, a nitrogenous substance extracted from inflammatory exudation, or a bacterial polysaccharide, or an exposure to ionizing radiation, induces increased capillary fragility. In the experiments reported by the authors, they demonstrate that injury to the capillary wall resulting from any of the methods mentioned can be prevented to a considerable degree by the administration of vitamin “P” compound composed of flavonoids naturally present in citrus fruit.—R.B.C.

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**Displacement of the adsorbed serum protein by other molecules of small diameter may result in an increase in pore size and a consequent injury to the capillary wall.** It has been shown that the administration of leukotoxine, a nitrogenous substance extracted from inflammatory exudation, or a bacterial polysaccharide, or an exposure to ionizing radiation, induces increased capillary fragility. In the experiments reported by the authors, they demonstrate that injury to the capillary wall resulting from any of the methods mentioned can be prevented to a considerable degree by the administration of vitamin “P” compound composed of flavonoids naturally present in citrus fruit.—R.B.C.

**Macroglobulinemia with Concomitant Hyperplasia of the Bone Marrow Mast Cells.** W. Tischendorf and F. Hartmann. From the Medical Clinic of the University of Göttingen (Germany). Acta haemat. 4: 374–382, 1950.

The authors present a new case of macroglobulinemia with hemorrhagic diathesis (first described by Waldenström in 1948). The total plasma protein was 15.5 per cent, thrombocytes 290,000, prothrombin concentration 55 per cent, Ac-globulin 24 per cent, retraction delayed. After withdrawal the serum congealed immediately with strong agglomeration of erythrocytes. Sternal marrow showed a great number of lymphoid reticulum cells but no increase of plasma cells. Electrophoretic analysis yielded 14.5 per cent albumins, 5.9 per cent α globulins, 70.2 per cent β globulins, 9.7 per cent gamma globulins. The pathologic protein belonged to the β globulin fraction and was related to fibrinogen.

The authors discuss the origin of the hemorrhagic diathesis and present the following hypothesis: (1) increase of permeability of the capillary membrane as a result of the hyperproteinemia, (2) loss of effectiveness of prothrombin and Ac-globulin because of macroglobulinemia, (3) formation of pathologic protection colloids from the protein which inhibits fibrin formation and (4) a hyper-heparinemia as a result of increase in number of mast cells in the bone marrow.—C.M.


The use of curietherapy against the endonasal telangiectasias in Osler disease is not new. But since it appears not to be a widespread treatment, it is interesting to consider the results given by the authors. Eight patients have been treated by radium, using 4 millierys in twenty-four hours in the first 2 cases, 8 millierys in the 6 following cases (4 millierys in each nostril). In all cases the results are perfect after twelve months of observation.

In 2 cases perforation of the septum was observed, but this was not accompanied by any functional trouble and remained unnoticed by the patients.—J.P.S.

**A Special Coagulation Disturbance in Dysproteinemia.** E. Uehlinger. From the Second Medical Department, Inselspital Berne, Switzerland. Helvet. med. acta 16: 518–528, 1949.

The author describes a case with severe anemia, hemorrhagic diathesis and increase of the β,α globulins, which was considered as a diffuse form of plasmacytoma or a chronic inflammation of the bone marrow.

The cause of the hemorrhagic diathesis was found to be a disturbance of the transformation of fibrinogen into fibrin. Instead of the normal fibrin threads the author observed a jelly-like mass. By simple dilution of the plasma the pathologic process disappeared and normal fibrin formation could be noticed again.—C.M.


The results of observations on 15 patients are reported. The coagulation time was followed carefully after the administration subcutaneously of 50 mg. of heparin at four hour
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intervals in a concentration of 100 mg. per cc. No serious complications are reported. One would anticipate that the absorption would be irregular with such injections because various regions were used (gluteal and deltoid) where movement of the patient might alter the rate and a "deep subcutaneous" injection might or might not be intramuscular. The administration of heparin by any method known at present demands constant observation to be both effective and yet not allow the coagulation time to be dangerously prolonged.—P.F.W.

A NEW CONCEPT OF VENOUS THROMBOSIS. A. J. Quick. From the Department of Biochemistry, Marquette University School of Medicine, Milwaukee, Wis. Surg., Gynec. & Obst. 91: 296-300, 1950.

The author reviews briefly his concept of blood coagulation and hemostasis, and postulates the following sequence of events in the formation and propagation of a venous thrombus. A localized area of injury in the vessel wall, which need be only slight, permits the adherence of platelets which undergo disintegration and initiate clotting. Thrombin is then produced and a fibrin clot formed. With retraction of this clot, a serum rich in nascent thrombin is expressed. If the circulation is sluggish this serum will not be washed away and a new clot will form upon the original thrombus. This clot will in turn retract and give rise to successive clots.

The significance of the phenomenon of clot retraction in the propagation of the thrombus is stressed. It could also explain why the thrombus may be unattached to the vessel wall except at its point of origin. Measures for the prevention of venous thrombosis should, therefore, take into consideration those factors influencing clot retraction, e.g., number of circulating platelets, concentration of thrombin and cell volume. Although no feasible method of platelet reduction is available, thrombin formation may be reduced effectively by anticoagulants. Little attention has been paid, however, to the correction of anemia which in some patients may play an important role in thromboembolism by virtue of the increased clot reactivity of anemic blood.—H.W.B.


Conflicting results were given after intravenous injection of trypsin. Rocha and Silva explained the delayed coagulation by liberation of heparin. Tagnon found no heparin but proteolysis and intravascular thrombosis, both explaining the decrease in prothrombin and fibrinogen.

D. Quivy studies this problem in dogs and rabbits, measuring clotting times of arterial plasmas after addition of thromboplastin. The results are plotted on a bilogarithmic paper, giving straight lines. In case of peptic shock the slopes of the lines are increased and the effect is of short duration. The same is observed after heparin injection. Here after trypsin injection, the lines are above the preinjection level but the different lines are parallels and the effect is prolonged allowing exclusion of the possibility of heparin discharge into the bloodstream.—J.P.S.


A method for extracting heparin is described. It is based on the use of phenol for precipitation, followed by solution of the plasma proteins. The question is properly raised that the method may be reliable for the measurement of added heparin, but that heparin in the "natural" state may be in a combined form and not detected by this method.—T.R.T., Jr.