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Abstracts

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ABSTRACTS

Panel discussion on gallbladder and biliary tract diseases. J. W. Berk, R. J. Bolt, A. M. Large, R. J. Priest, and H. M. Stauffer. *Am. J. Gastroent.* 38:407, 1962.

Dr. J. Edward Berk (Detroit, Mich.): A great deal of information has been amassed over the years regarding diseases of the gallbladder and biliary ducts. This area, however, is not stagnant. New additions to our knowledge are constantly being made. It would seem fitting, therefore, that we review and re-evaluate the situation in light of accumulated knowledge. The members of the panel here assembled can speak with authority on the subject under consideration. Dr. Robert J. Bolt (Ann Arbor, Mich.) will speak on present knowledge of the treatment of cholecystitis and cholelithiasis. Dr. Robert J. Priest (Detroit, Mich.), the next panelist, will consider "Laboratory and Special Diagnostic Procedures (other than x-ray) in Gallbladder and Biliary Tract Disorders". Dr. Herbert M. Stauffer (Philadelphia, Pa.) will consider "Roentgen Aspects of Disorders of the Gallbladder and Biliary Tree". Dr. Alfred M. Large (Detroit, Mich.), the final speaker, whose presentation will conclude this portion of our symposium, will consider: "The Surgical Aspects of Gallbladder and Biliary Tract Disorders". There is really little disagreement about operation within 48 hours of onset in the acutely ill patient who grows worse or fails to improve on conservative management, just as Dr. Large has described. Considerable disagreement does exist, however, on the question of how best to proceed with the patient who shows clinical subsidence or improvement within the first few days after initiation of conservative management. When is the "optimum" time to operate on such a patient? Various criteria have been mentioned in the literature. It is difficult, however, if not impossible, to manage all cases in precisely the same way. In the final analysis, each of us elects to proceed as our own experience and teaching has biased us and as we interpret the situation to require in each individual case.

Surgical problems in management of islet-cell tumors with gastric hypersecretion. M. A. Block, R. F. Smith, W. S. Haubrich, and R. C. Horn. *Arch. Surg.* 85:270, 1962.

Six patients having islet-cell tumors associated with gastric hypersecretion illustrate the varied clinical manifestations of this condition and problems in their surgical management. The minute size of the primary lesions in the majority of our patients is emphasized. The diagnosis was established in 3 patients by finding metastases in lymph nodes. Unless the surgeon meticulously searches the pancreas for a tiny nodule and removes it for study, the presence of these lesions will not be verified even though this condition is suspected clinically. In some of these patients, the primary lesion appears to be an islet-cell tumor of the duodenum which also may be minute in size. Total gastrectomy remains the preferred treatment for this condition whether manifested clinically by either severe diarrhea or ulcer disease or both. A total gastrectomy may be needed later if ulcer disease or diarrhea recurs. Patients suspected of having islet-cell tumors associated with gastric hypersecretion should be screened for the presence of hyperparathyroidism.

An abnormal leukocyte response in interstitial cystitis. A. W. Bohne, J. M. Hodson, J. W. Rebeck, and R. E. Reinhard. *J. Urol.* 88:387, 1962.

Although interstitial cystitis has been a recognized clinical entity for almost 50 years, its etiology has remained obscure. Since the disease was first described by Hunner in 1914, numerous theories as to its cause have been postulated. In 1961 Simmons reported an increased number of mast cells in the bladder of patients with interstitial cystitis and suggested that many of the pathologic changes in the bladder may be the result of the release of mast cell products. He also described the use of antihistamines as a therapeutic agent in the

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treatment of the disease. An abnormal leukocyte response in skin windows of patients with interstitial cystitis has been demonstrated. This is characterized by an increase in basophilic granulocytes and has to date been demonstrated in only one other disease, ulcerative colitis. This coupled with the observation that increased numbers of tissue mast cells exist in the lesions of both diseases would certainly suggest a common pathogenesis.

Simple technique for photographing and viewing the agar gel diffusion plate. A. J. Bowden, and R. C. Horn, Jr. *J. Biol. Photo. Assoc.* 30:105, 1962.

Ever since Ouchterlony's discovery of the gel diffusion plate method for demonstrating antigen-antibody precipitation patterns, photographers have faced many trying problems trying to photograph them. Although there are numerous techniques for demonstrating these patterns, they are all based on two fundamental methods — the darkfield and the shadow graph methods. A simple and inexpensive yet effective technique of photographing agar gel diffusion plates is described. Based on darkfield illumination, it utilizes an adaptation of either a trans-illuminated light box or a conventional view box.

For the physician who may have forgotten how to diagnose diabetes. J. B. Bryan. *J. Michigan Med. Soc.* 61:1201, 1962.

Application of the clinical clues to diabetes, and screening diabetic suspects with post-prandial urines and blood sugars after an adequate diet will aid the practicing physician in finding all the unknown diabetics in his practice. Attempts to prove the presence or absence of diabetes on the basis of urine testing alone, fasting sugars only, or the clinical symptoms and signs without proper confirmatory laboratory testing will lead only to confusion and failure. Elaborate studies do not replace reliable, routine methods.

Metastatic carcinoid: a familial occurrence. J. W. Eschbach, and J. A. Rinaldo, Jr. *Ann. Int. Med.* 57:647, 1962.

The carcinoid syndrome is characterized by vasomotor phenomena, bronchoconstriction, intestinal hyperperistalsis, and stenosis and insufficiency of the pulmonary and tricuspid valves due to the effects of excessive circulating 5-hydroxytryptamine (serotonin). This symptom complex is rarely found in the absence of metastatic carcinoid tumors. The classical form is not always present. Although isolated carcinoid tumors of the gastrointestinal tract are not uncommon, liver metastases with hyperserotonemia are unusual. Their occurrence in more than one member of the same family has not been reported. This report describes a woman with a well-documented carcinoid syndrome whose brother also had metastatic carcinoid tumor and probably the carcinoid syndrome.

Evaluation of roentgen signs of pancreatic enlargement. W. R. Eyler, M. D. Clark, and R. L. Rian. *J.A.M.A.* 181:967, 1962.

The original routine interpretation of the upper gastrointestinal series in 100 cases of carcinoma of the pancreas resulted in a positive diagnosis in only 24 cases. In a controlled retrospective study, a positive diagnosis of pancreatic enlargement was made in 57 of the 100 cases; an additional 9 were thought sufficiently suspicious to warrant re-examination with particular attention to this possibility, usually when the routine films had not shown the duodenal loop well filled. A review was made of various signs of pancreatic abnormality and each sign was evaluated for validity. A group of cases of pancreatitis associated with duodenal ulcer was also analyzed. The use of cases explored for some other cause prevented "over-interpretation."

Thickness of osteoid seams in human beings. H. M. Frost. *Clin. Orthop.* No. 25:175, 1962.

Osteoid seam is a term denoting the layer of unmineralized bone matrix found on the surfaces of bone where new lamellar bone formation has been in progress. It has long been known that the presence of increased numbers of osteoid seams and the presence of increased thickness of these seams usually characterize the osteomalacic skeleton. While osteoid is a

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necessary stage in ossification, it has been appreciated less widely than osteoid seams are present normally in the adult human skeleton, and there are works in which it is stated that osteoid seams are not found in the normal adult human skeleton. The numbers of seams per unit volume in various bones were described. In this article the width of human osteoid seams in a number of normal and abnormal human beings is reported.

Cancer of the pancreas and diabetes. A. W. Gothard, and F. W. Whitehouse. J. Michigan Med. Soc. 61:1215, 1962.

Does primary carcinoma of the pancreas occur more commonly in the patient with genetic diabetes? Indeed, is cancer more commonly associated with diabetes than without diabetes? The literature contains conflicting evidence and opinion. One hundred and twenty-two cases of primary carcinoma of the pancreas and 59 cases of primary carcinoma of the stomach were initially surveyed. Average age at diagnosis and sex frequency were determined as well as frequency of associated diabetes. Those patients with diabetes were subdivided into one group with pre-existing diabetes and a second group with the diagnosis of diabetes made after the diagnosis of the cancer. The increased occurrence of diabetes after the diagnosis of carcinoma of the pancreas suggests a destructive effect on the pancreas by the tumor or related inflammation. The difference in frequency of pre-existing diabetes is unexplained and was not expected at initiation of this survey. From this preliminary survey, a need to review the frequency of diabetes associated with various malignancies is apparent.

Detroit School-community behavior projects. B. M. Hamil, and H. M. Stitt, Jr. J. Michigan Med. Soc. 61:1119, 1962.

This project is a multi-disciplined approach through school and community resources to identify and treat as early as possible pre-puberty elementary school children who exhibit a major degree of anti-social and/or asocial behavior. The plan as devised was to identify at an early age the delinquency-prone child and to work with this child by using **enlisted volunteer school and community resources**. The identity of the "delinquency prone" child does not entail a direct approach for the identification of this individual child. There may be many contributory factors, of which failure to progress satisfactorily up to the level of anticipated ability in the learning situation may possibly be the most important one. The cause of this situation is not as simple as that of just determining I.Q. by psychological examination. Special abilities, special disabilities, interpersonal relationships, deprivations, problems of family morality and the general field of distorted emotions must be explored and evaluated. This project therefore must have the benefit of the cooperative efforts of many disciplines, and may involve the study of behavioral deviations generally in order to accomplish the primary objective, "the identification at an early age of the delinquency-prone child."

An acute atypical colitis after antibiotic therapy: case report. H. N. Harkleroad, and J. A. Rinaldo, Jr. Gastroenterology 43:585, 1962.

A patient with an acute atypical colitis is presented because of the unusual sigmoidoscopic and radiographic findings. A pseudomembrane appeared first as small patches of creamy white material, tightly adherent to the mucosa and later as a homogeneous confluent white exudate. It appeared radiologically as varying sized filling defects along the entire colon wall. A fibrinopurulent exudate without necrosis of the lamina propria was the most striking histologic feature.

Laparoscopy (peritoneoscopy) with endophotography and guided liver biopsy. I. W. S. Haubrich. Am. J. Gastroent. 38:311, 1962.

Laparoscopy (peritoneoscopy) and guided liver biopsy. II. G. A. Uhlich and W. S. Haubrich. *Ibid.* p. 313.

Recent improvement of instruments and technic have greatly increased the practical value of laparoscopy and guided biopsy. Similar to paracentesis and blind liver biopsy, laparoscopy and guided biopsy are carried out under local anesthesia and with strict asepsis. The use of operating rooms for these procedures is dispensable. Hemorrhage from the biopsy site is readily recognized and effectively controlled by local measures in the course of guided liver

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biopsy. Laparoscopy, rather than immediate surgical exploration, should be considered in patients presenting with icterus, hepatomegaly, or ascites if clinical investigation does not yield a clear cut diagnosis. Guided liver biopsy is indicated in cases requiring tissue diagnosis but in which blind needle biopsy is contraindicated, technically difficult, or unsatisfactory. An over all mortality of less than 0.1 per cent and the low incidence of complications mark laparoscopy as a safe endoscopic procedure. Careful case selection, painstaking technic, and awareness of limitations are essential prerequisites for obtaining the desired results.

Effect of degree of hypoxia on the electroencephalogram in infants. P. J. Howard, and A. R. Bauer. *J. Pediat.* 61:511, 1962.

Fourteen infants with congenital heart disease were studied with EEG and determinations of oxygen saturation. Ten infants were less than 1 month of age and 4 infants were between 1 and 5 months of age. The low or minimum oxygen saturations indicated the degree of hypoxia present in each infant before oxygen was given and were from 49 to 88 per cent. Maximum or high saturations were obtained by giving oxygen; the levels of saturation attained ranged from 65 to 99 per cent. EEG's were obtained in room atmosphere and during oxygen administration. Infants who had at least a 10 per cent improvement in oxygen saturation are recorded here. Six infants had a decrease in 1 to 4 per second electroencephalographic waves with higher oxygen saturation, and 8 infants had an increase of 1 to 4 per second electroencephalographic waves with higher oxygen saturation. The time between observations with minimum and maximum oxygen saturation varied from 4 to 30 minutes depending on the activity of the infant. An analysis is shown of variations in the EEG's in a normal infant during a period of 41 minutes after a feeding. Sample analyses are shown of the effect of giving 5 per cent carbon dioxide in 95 per cent oxygen on the EEG. Five of the seven infants showed a decrease of 1 to 4 per second waves, 2 showed the reverse. An increase of 10 per cent or more in the oxygen saturation of the blood did not produce a significant change in the EEG.

Erythroid hypoplastic anemia (erythroblastopenia) associated with benign thymoma. D. P. Jahsmán, R. W. Monto, and J. W. Rebeck. *Am. J. Clin. Path.* 38:152, 1962.

Although the treatment of hypoplastic anemia is notoriously unsuccessful, when the hypoplasia is limited to erythroid elements and associated with a thymoma, improvement often follows thymectomy. Of the 28 published cases with hypoplastic anemia occurring with mediastinal tumor, complete surgical resection was performed in 16. This paper deals with the clinicopathologic findings in a 77-year-old man who had erythropoietic hypoplasia associated with benign thymoma. Additional findings were diabetes mellitus, with the occurrence of L.E. cells, and positive Coombs' tests. The latter 2 phenomena disappeared after surgery. No apparent benefit was obtained from thymectomy, or therapy with steroids, or androgens.

Antomy of the sinus node of the dog. T. N. James. *Anat. Rec.* 143:251, 1962.

The sinus node of the dog is in most respects quite similar to that of man. This includes its location, internal structure, close relationship to a nutrient artery, and the presence of syncytial cells. The blood supply of the canine sinus node differs from that in man, the sinus node artery of the dog being almost exclusively from the right coronary artery and its arterial anastomoses being very extensive. Certain anatomic features potentially useful in physiologic studies are briefly discussed.

Pericarditis and the sinus node. T. N. James. *Arch. Int. Med.* 110:305, 1962.

Since the human sinus node is normally located 1 mm. or less beneath the epicardium, it must commonly be involved in pericarditis. The potential clinical significance of such involvement is readily apparent. It is surprising, therefore, that the sinus node has received little attention in pericarditis. In this clinicopathologic study of hearts from 144 patients dying with disturbances of cardiac rhythm or conduction, pericarditis was present in 38. On histologic study of the conduction system the pericarditis involved the sinus node in all 38. Twenty-six of the 38 had documented atrial arrhythmias. Findings based on a study of 38 patients with pericarditis indicate that, because of its anatomic proximity to the epicardium, the sinus node is usually involved in pericarditis. Although the exact incidence of paroxysmal atrial arrhythmias during pericarditis is not known, it is suggested that the incidence is

higher than generally realized. Some of the possible mechanisms by which pericarditis may lead to such arrhythmias are discussed.

Observations on bladder regeneration. A. J. Johnson, D. L. Kinsey, and R. A. Rehm. *J. Urol.* 88:494, 1962.

A remarkable regenerative property of the bladder has been recognized for at least 70 years. Nonetheless, clinical application of this phenomenon has been made infrequently. Massey believed that further investigation of bladder regeneration "might develop techniques for establishing substitute or new urinary reservoirs far superior to methods of urinary diversion now in vogue." The literature pertaining to bladder regeneration has been reviewed. Eight dogs in this study survived urinary diversion, cystectomy, and implantation of a mold in the bladder fossa. In each case a fibrous pouch formed around the mold. There was very limited regeneration of epithelium. Heterotopic ossification was seen in some. Bundles of smooth muscle were seen in 2 instances. This did not arise from the urethral musculature. Six dogs survived a similar procedure in which the terminal ureters were left in place. The results were similar. The significance of these findings is discussed. Some support is given to the theories that smooth muscle in the regenerated bladder arises from a multipotential cell and that intermittent distention is a necessary mechanical stimulus to satisfactory smooth muscle regeneration.

Rhabdomyosarcoma: clinical and pathological features and comparison with human fetal and embryonal skeletal muscle. R. B. Patton, and R. C. Horn, Jr. *Surgery* 52:572, 1962.

Clinical and pathological features of 30 cases of rhabdomyosarcoma are reported and discussed in combination with 40 similar cases previously reported by one of the authors. Gross and histological differences permit classification of the tumors as pleomorphic, alveolar, embryonal, and botryoid. The average age of patients with these tumors was, respectively, 53, 29, 13 and 7 years. The extremities were the site of 26 tumors, but 5 were near the trunk, leaving 21 sufficiently peripheral to permit radical surgical removal. Twenty-one tumors were in the head and neck area and 12 in pelvic organs. The prognosis of this type of tumor is poor. Only 7 of 68 patients who have been followed are free of tumor more than one year after treatment. Forty-nine are known to be dead. Radical surgical therapy appears to offer the best chance of long-term good results. Embryonal and fetal human muscle was examined in order to clarify the histogenesis of these tumors. Morphologic similarities of the embryonal and alveolar tumors to muscle from fetuses of 7 to 10 weeks and 10 to 12 weeks, respectively, are described.

Long-term evaluation of plastic arterial substitutes. An experimental study. J. R. Pfeifer, D. E. Szilagyi, J. G. Whitcomb, G. Fine, and F. J. DeRusso. *Surgical Forum* 13:223, 1962.

In a study extending over 8 years we attempted to evaluate experimentally the comparative clinical usefulness of diverse plastic arterial prostheses. The more important of the conclusions drawn were as follows: (1) Twelve months of implantation appear to be the shortest length of time required for the experimental evaluation of an arterial substitute. (2) The macroscopic and microscopic details of recovered plastic arterial prostheses from the dog preparation described give a reliable prognostic view of the arteriogenesis to be expected in clinical use. (3) On grounds of the findings here reported, seamless woven tubes of elasticized dacron yarn display certain advantages. (4) As indicated by controlled flowmeter studies, a smooth luminal surface is a hydrodynamically desirable quality. (5) While a certain degree of porosity per se is a critical and indispensable quality for the proper functioning of a plastic arterial substitute, in these experiments the slight variations in the degree of porosity were not reflected in significant changes in the quality of arteriogenesis.

Localization of kidney for renal biopsy. C. E. Rupe, W. R. Eyler, and J. L. Irwin. *J. Urol.* 88:455, 1962.

Percutaneous needle biopsies of the kidney have been done at the Henry Ford Hospital since 1956. Localization of the kidney has been similar to that described by Muehrcke.

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X-rays prior to biopsy are now obtained in the following manner: The patient is placed prone on the table with a rolled sheet under the abdomen. The approximate position of the lower pole of the right kidney is marked on the skin. A grid consisting of a sheet of lucite with a cross made of pinheads embedded at 1 cm. intervals is placed over the skin mark. The x-ray is taken during deep inspiration with the center rays aimed at the cross. The plain x-ray (KUB) can be used or localization can be obtained while making an excretory urogram.

Application of bound flavin analysis to the study of the turnover number of succinate dehydrogenase and of the reconstitution of the succinoxidase system. T. P. Singer, J. Hauber, and O. Arrigoni, *Biochem. Biophys. Res. Com.* 9:150, 1962.

This article describes a method for the chemical determination of the succinic dehydrogenase **content** of tissue preparations and its application to various problems in intermediary metabolism. Since the method depends on the determination of the unique chemical properties of succinic dehydrogenase which serve as a tag to distinguish it from other kinds of proteins, it does not depend on catalytic activity. Hence, unequivocal values of the content of the enzyme may be obtained regardless of whether the enzyme is in the active, precursor, or inactivated form. With the help of this method it has now been possible to show that the "turnover number" (number of moles of substrate oxidized per mole of enzyme per minute) is the same for succinic dehydrogenase in all types of respiratory chain preparations from heart. Claims that the turnover number varies from one preparation to another, depending on its history, have been shown to be due to methodological artifacts. The turnover number of certain soluble, highly purified preparations of the enzyme from heart is considerably lower, however, than that of intact tissue; other soluble, highly purified preparations show the same turnover number as mitochondria. Thus it is now possible to decide which procedure modifies the enzyme in the course of extraction and purification and which does not. This analytical method has also been applied to the highly interesting question of whether the succinic oxidase chain (i.e., mitochondrial respiratory chain) is the same when reconstituted from soluble enzymes, as has been claimed in the literature, as it is in untreated starting material. Besides differences in catalytic constants it has now been shown that such reconstituted succinic oxidase preparations contain twice as much succinic dehydrogenase per mole of cytochrome system as do untreated samples. Consequently, the so-called "reconstituted" preparations which have been termed "physiological" are in fact man-made artifacts which only resemble the system **in vivo**.

Mitochondrial NADH-cytochrome *c* reductases: Physiological entities or artifacts? T. P. Singer and E. B. Kearney. Symposium on Redox-Function of Cytoplasmic Structures, Joint meeting of the German Societies of Physiological Chemists and Austrian Biochemical Society, Preprint 241-265, Vienna, September 26-29, 1962.

This is a review presented at the decennial celebration of the Austrian Biochemical Society which was held in conjunction with the annual meeting of the German Societies of Physiological Chemistry and Pharmacology. It deals with the history of the concept of the occurrence of DPNH-Cytochrome reductases (NADH cytochrome reductases in current terminology) and summarizes work in the authors' laboratory which has conclusively demonstrated that these enzymes are not of natural occurrence, at least in mitochondria, but are interesting degradation products of another enzyme. DPNH cytochrome reductases have been known for over twenty-five years and have been considered to be key enzymes in the mitochondrial energy generation system. Their existence has been so generally believed that for many years they have been taught in medical-biochemistry courses as examples of respiratory enzymes. At least six DPNH-cytochrome reductase preparations, which have been claimed to be different enzymes, have been isolated from cardiac tissue and extensively investigated. Each of these has been claimed at one time or another to be the enzyme responsible for linking DPNH oxidation to the respiratory chain and, hence, to oxidative phosphorylation. Having demonstrated that the criteria employed in the literature for distinguishing these enzymes are unreliable, new ones were devised by the authors. With the aid of these the six different preparations have been shown to be indistinguishable from each other. Further, they are indistinguishable from a chemical modification obtained in this laboratory by treating the **native** form of DPNH dehydrogenase (DPNHd) with acid-ethanol-heat (a common step in the preparation of all cytochrome reductases in the literature). Under the influence of either heat alone, organic solvents alone, or exposure to acid pH in the cold, native DPNHD is very rapidly transformed to a typical cytochrome reductase. This trans-

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formation is accompanied by profound changes in all the catalytic and molecular properties of DPNHD hitherto examined. Typically, the fragmentation of DPNHD is accompanied by an enormous increase in reactivity toward dyes (diaphorase reaction) and with cytochrome c (cytochrome reductase activity). The non-existence of DPNH cytochrome reductase in heart mitochondria has been further documented by careful balance studies and suitable assays for DPNHD and for cytochrome c reductase activity. These and other lines of evidence clearly demonstrate that DPNH cytochrome reductases derived from heart mitochondria are man-made enzymes and that the physiological enzyme is the DPNHD isolated in this laboratory.

Surgical treatment of mycotic aneurysms. R. F. Smith, D. E. Szilagyi, and J. M. Colville. *Arch. Surg.* 85:663, 1962.

Mycotic aneurysms are uncommon arterial lesions that arise as a complication of septicemia, usually that of subacute bacterial endocarditis. Before the advent of antimicrobial drug therapy, blood stream infections rarely healed and metastatic abscesses of the arterial wall appeared almost invariably as terminal phenomena; even if the lesions were recognized before death, the clinical course often made repair impossible or rendered the result fruitless. The experience with the surgical treatment of 4 mycotic arterial aneurysms observed during the past 5 years has been reported. A mycotic aneurysm of the peripheral arteries requires prompt surgical treatment. The aneurysm must be resected as soon as adequate antibacterial therapy has been instituted, and the antibacterial measures must be continued postoperatively. In all cases but those in which noncritical arteries are affected (where double arterial ligation is satisfactory) the continuity of the arterial trunk must be reestablished by means of a graft that should preferably be of autogenous venous material and by a technique that avoids the placement of the lines of anastomosis in an infected or severely damaged tissue bed.

Radiologic diagnosis of prenatal congenital hip dislocation and subluxation in the newborn. S. Stanisavljevic. *Radiology* 79:606, 1962.

Controversy over the possibility of radiological diagnosis of congenital hip dislocation and subluxation in the newborn is well known. It was this division of opinion that stimulated the author's curiosity and led in 1958 to initiation of the study to be reported here. During the period 1958-1961 the author examined personally 5,000 newborn infants between the second and sixth day of age and dissected the hips of 120 who were stillborn or lived for only a few hours. All this material was used for roentgenographic, clinical and anatomicopathologic studies. The characteristics of the x-rays of the prenatal superoposterior hip dislocation in the stillborn and newborn babies were as follows: (A) Acetabular index was within normal limits. (B) The "acetabular beak" was present but smaller than in the normal acetabula. (C) Push-pull films showed a higher cephalocaudal level of the proximal femur compared with the ordinary anteroposterior view of the same hips. There was lateralization of the proximal femoral end. (D) The acetabular index and the "acetabular beak" were almost the same on films taken with the sacrum flat on the table or tilted 15° and 25°. (E) Clinically these hips had a positive telescoping sign. There was no limitation of abduction and Ortolani's sign was negative. The characteristics of the x-rays of the prenatal congenital hip subluxation in the still- and newborn babies were as follows: (A) On radiographs made with the sacrum flat on the table, the acetabular index was above 28° and the "acetabular beak" was absent. (B) With the sacrum tilted 25°, the hips showed the acetabular index within normal limits and the presence of the "acetabular beak" (a false normal, due to interposition of the normally developed anterosuperior part of the acetabulum, overshadowing the defect on the superoposterior aspect of the bony acetabulum). (C) Push-pull films were negative. (D) In order to obtain a true picture of the superoposterior aspect of the acetabulum, the anteroposterior view of the hips should be taken in frogleg position with the thighs flexed 80° to 85° and abducted 60° to 70°. In this position the sacrum is completely flat on the table. The angle of the pelvic brim gives useful information on the position of the sacrum on the table while the roentgenogram of the hips is taken.

Reconstruction of the thumb: A One-stage procedure. A. E. Stefani, and A. P. Kelly, Jr. *Brit. J. Plastic Surg.* 15:289, 1962.

A case report is presented in which another method for reconstruction of a thumb for use in a selected case has been outlined. This procedure utilizes a local tubed flap and bone graft in one stage to produce a thumb of adequate length and sensation. The reconstruction meets admirably the requirements of a satisfactory thumb except for appearance.

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The internal structure of colloidal crystals of β -FeOOH and remarks on their assemblies in Schiller layers. J. H. L. Watson and R. R. Cardell, Jr. *J. Phy. Chem.* 66:1757, 1962.

It is shown how ultrathin sectioning of colloidal crystals can be applied to electron microscopical studies of their structure. The technique is described and applied to tactoid-forming deposits of β -FeOOH crystals. Cross sections of the single crystals show that they are square and remarkably uniform with a side of about 550 angstrom units. Their mutual orientation has been maintained during specimen preparation and the crystals are shown to exist in an orthogonal array. A structure is demonstrated **within** the crystals, which is shown to be most probably that of an oriented bundle of loosely packed rods, also in an orthogonal array, wherein the repeating distance is about 60 angstrom units. The long rods are themselves crystals and are referred to as "sub-crystals," regularly arranged within the conventional crystal. They are about 30 ± 5 angstrom units thick, separated by about the same distance. Electron micrographs illustrate evidence for the substructure from both longitudinally and cross sectioned crystals, as well as unsectioned crystals. An example of fringes 11 angstrom units apart ($\pm 10\%$) is shown, in good agreement with the **a** dimension (10.48 angstrom units) in the tetragonal unit cell. The observations suggest that the crystals grow by reason of tetragonal unit cells forming subcrystals in such a way as to promote a uniform rate of growth in the **a** and **b** directions and in this sample about 14 more rapid growth in the **c** direction. There is some evidence to support the view that the subcrystals might be hollow rods. Pertinent observations also are reported concerning the occurrence of twins and other irregularly shaped crystals (somatoids) among the β -FeOOH crystals.

The diabetic foot: A problem in therapy. W. L. Lowrie. *J. Michigan Med. Soc.* 61:1217, 1962.

In spite of improved management of diabetes, foot complications are seen with greater frequency. This greater incidence can be explained by increased longevity and longer duration of diabetes, with a concomitant greater degree of vascular pathology. In diabetics, atherosclerosis of the senile type may become evident at an earlier age than in the non-diabetic. Evidence has been presented that diabetes of long duration is also accompanied by small artery disease similar to that seen in the nephropathy of diabetes (Kimmelstiel-Wilson). Intimal proliferation with the presence of PAS positive material has been demonstrated in the arterioles of the extremities and other organs. The resulting peripheral ischemia may be present with or without sclerosis of larger vessels and may be responsible for gangrene confined to a small area, such as a toe or part of a toe. Gangrene resulting from occlusion of a large vessel tends to involve a larger portion of the foot. While surgical amputation is to be avoided as long as possible without endangering the life of the patient, such an operation is obligatory under certain circumstances. Diabetic gangrene usually is relatively painless but in a small percentage of cases, pain may become unbearable. When it persists and requires narcotics, amputation will be necessary. When infection cannot be controlled by antibiotics due to resistant microorganisms, amputation will be required to prevent septicemia. Excessive destruction of tissue which precludes the possibility of healing or successful skin grafting will require amputation.

Diplopia associated with diabetes mellitus. W. E. Redfern. *J. Michigan Med. Soc.* 61:1211, 1962.

Fifteen diabetic patients, mostly in the 50- to 78-year age group, have been observed with ophthalmoplegia. Spontaneous recovery occurred in about two to six weeks. Because of the rapid recovery of the diabetic ophthalmoplegia, in our opinion, angiographic procedures may be postponed for six weeks. In most instances, the pupillary reflex was spared and pain was not a prominent feature in these cases. Diabetes should be considered in cases of diplopia, but other causes must also be ruled out by a complete neurological study.

Glucagon for hypoglycemia. F. W. Whitehouse. *J. Michigan Med. Soc.* 61: 1221, 1962.

A hyperglycemic principle was found in early preparations of insulin. The name, glucagon, was given to it by Murlin in 1924. Clinical use of glucagon resides in its ability to overcome severe hypoglycemia. This is most valuable in patients with diabetes on insulin or in the occasional psychiatric case undergoing insulin shock therapy. We have found glucagon to be most useful in our diabetic patients; (1) in the home where a trained lay person can give glucagon to the diabetic in insulin coma; (2) in the physician's bag where glucagon makes the house call for treatment of hypoglycemia easier; and (3) in the hospital where nurses could use glucagon prior to arrival of the physician.



