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Abstracts Of Recent Publications Of The Professional Staff Of The Henry Ford Hospital And The Edsel B. Ford Institute For Medical Research

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ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL
STAFF OF THE HENRY FORD HOSPITAL AND THE
EDSEL B. FORD INSTITUTE FOR MEDICAL RESEARCH

COLOSTOMY CLOSURE BY THE INTRAPERITONEAL METHOD. J. BARRON,
AND L. S. FALLIS. *Dis. Colon & Rectum* 1:466, 1958.

A series of 200 patients in whom colostomy stomas have been closed by the intraperitoneal method is presented. There were no deaths. There was only one anastomotic failure. Morbidity is insignificant. The intraperitoneal method of colostomy closure is preferable to the extraperitoneal procedure which subjects the patient to the discomfort of repeated application to the spur, of the crushing clamp and fails to accomplish its purpose in a high percentage of cases.

*LIVER CHOLESTEROL MOBILIZATION IN MICE AS EFFECTED BY DIETARY BETA-SITOSTEROL AND CHOLIC ACID. W. T. BEHER AND W. L. ANTHONY. *Proc. Soc. Exper. Biol. & Med.* 99:356, 1958.

In a previous study on mobilization rate of accumulated plasma cholesterol in the rabbit, β -sitosterol had a slight, initial accelerating effect. Alfin-Slater *et al.* have reported that soybean sterols, composed mainly of β -sitosterol and stigmasterol, have little effect in preventing blood cholesterol accumulation but have considerable effect in reducing cholesterol deposition in liver. Therefore, it was of interest to study the effect of β -sitosterol on rate of mobilization of accumulated liver cholesterol. Recent reports on cholesterol metabolism have shown that bile acids are important agents affecting cholesterol mobilization. Our studies have demonstrated that cholic acid blocks liver cholesterol mobilization in mice. Since cholic acid apparently alters the pathway of cholesterol metabolism, it seemed worthwhile to investigate the effect of β -sitosterol on mobilization of accumulated liver cholesterol in animals fed cholic acid. Cholic acid prevents mobilization of elevated liver cholesterol. β -sitosterol did not increase rate of mobilization of accumulated mouse liver cholesterol. β -sitosterol reduces in large measure the effect of cholic acid on liver cholesterol mobilization.

STENOSIS OF THE SPHINCTER OF ODDI AS A CAUSE OF JAUNDICE. A. BLOCK, B. E. BRUSH, L. PONKA AND A. CREPEAU. *A.M.A. Arch. Surg.* 76:888, 1958.

Stenosis of the sphincter of Oddi is a rare cause of obstructive jaundice in the absence of other abnormalities of the biliary tract. Surgical correction of isolated stenosis of the sphincter of Oddi will relieve obstructive jaundice, providing evidence of the clinical importance of this lesion. A mild to moderate degree of induration

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in the head of the pancreas frequently is an associated abnormality in obstructive jaundice due to stenosis of the sphincter of Oddi. Stenosis of the sphincter of Oddi is more frequently present in association with biliary tract lithiasis or pancreatitis in the absence of jaundice. In our experience dilatation of the sphincter of Oddi is not followed by the production or recurrence of stenosis. If stenosis of the sphincter of Oddi is pronounced, transduodenal sphincterotomy should be performed. Before the diagnosis of sphincter of Oddi is made, the presence of an impacted stone or malignancy must be ruled out and the presence of definite narrowing of the lumen of the sphincter demonstrated. Results of surgical correction of stenosis of the sphincter of Oddi are good. An evaluation of the sphincter of Oddi should be a routine part of every commonduct exploration.

LOCAL OR GENERAL ANESTHESIA FOR ESOPHAGOSCOPY, LARYNGOSCOPY AND BRONCHOSCOPY; AN EVALUATION OF 300 CASES. D. S. BOLSTAD AND J. W. DITZLER. *Ann. Otol. Rhin. & Laryngol.* 67:1154, 1958.

Three hundred and twenty-five administrations of Hydroxydione are reviewed. Ninety per cent of these patients were submitted to suspension laryngoscopy, adult tonsillectomy, bronchoscopy, esophagoscopy and other procedures about the airway. Viadril, or Hydroxydione, a non-functioning steroid, is a profound sedative, lacking in analgesia but possessed of excellent jaw relaxing qualities exacting a minimal price on respiration. When coupled with topical or local anesthesia and use of narcotic drugs in small doses, it is a superior method for ear, nose and throat anesthesia in the adult from the standpoint of the patient, anesthetist and surgeon. Slowness in onset and recovery, vein irritation and the frequent satisfactory usage of solely local anesthesia restricts this drug to procedures where topical or local alone appears to be inadequate.

PLASMA PROTEINS IN MALIGNANT DISEASE. M. J. BRENNAN, W. L. SIMPSON AND G. BETANZOS. *Postgrad. Med.* 24:36, 1958.

The abnormalities of serum enzyme activities and of serum protein distribution generally indicate deterioration in patients with cancer. Reversal of these abnormalities accompanies remission of the malignant disease. These various indexes may provide a more reliable measure of therapeutic response than the patient's subjective impression, and they may be employed when inaccessible tumor growth makes direct measurement of response impossible. The continued study of blood proteins from patients with cancer may contribute not only to practical diagnosis and management but also to a better understanding of resulting pathophysiology, thereby pointing to more promising means of successful intervention. To date, no serum protein change has been found diagnostic of neoplastic disease.

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THE TREATMENT OF POSTMASTECTOMY LYMPHEDEMA. B. E. BRUSH, J. H. WYLIE, J. BENINSON, M. A. BLOCK AND T. J. HELDT. *A.M.A. Arch. Surg.* 77:561, 1958.

Edema of the arm may be successfully treated by means of an appliance to reduce the swelling, plus the use of a custom-fitted sleeve when the pump is not in use or no longer needed. The pain, discomfort, and swelling are relieved. The incidence of chills, fever, and localized infection is greatly diminished. Strict adherence to instructions is important, and medical supervision of the device is imperative. Swollen arm, a troublesome sequela of radical breast surgery, need not be tolerated.

THE UNRELIABILITY OF CASUAL BLOOD PRESSURES AS AN INDEX TO CARDIOVASCULAR-RENAL DISEASE. J. R. CALDWELL AND F. W. HOLLINGER. *Postgrad. Med.* 24:26, 1958.

The casual measurement of blood pressure in the office is insufficient. Basal blood pressure determination, as here described, is simple and practical. Though far from ideal it is usually lower and more significant than the casual readings. In 30 minutes the physician can often obtain information which otherwise may take three or four days to obtain with the patient at rest in the hospital. Casual readings are of value in separating patients with suspected hypertension from patients with normal blood pressures. However, the basal determination is of value before prescribing antihypertensive drugs or making prognostic statements about hypertension, a diagnosis often unjustly made from casual blood pressure determinations which, in reality, are not casual.

A DIFFERENT CONCEPT OF PROTHROMBIN TIME CONTROL FOR ANTI-COAGULATIVE THERAPY. M. J. CALDWELL AND E. M. PRIEST. *Am. Heart J.* 56:737, 1958.

Three different thromboplastins were used in the Quick one-stage prothrombin time on plasmas of patients to whom oral anticoagulants had been administered. Thromboplastin #1 gave very uniform results. Thromboplastin #2 gave shorter prothrombin times, and thromboplastin #3 gave more prolonged values and separated out a few plasmas which appeared to be different from the others.

STUDIES OF TIME-DOSE RELATIONSHIPS: THE EFFECT OF FRACTIONATION. L. A. DuSAULT, W. R. EYLER AND W. M. BURNS. *Radiology* 71:709, 1958.

Spontaneous mammary adenocarcinomas in C3H mice irradiated at the rate of 2,000 r/week were found to show greater response when treated three times a week than when treated on five successive days. This is true at both the 6,000 r and 8,000 r

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total dose level. Normal tissue reactions were only slightly increased. An increased differential effect in tumor and normal tissue, therefore, can be obtained by this timing of treatments. The optimum interval between treatment depends on the size of the individual dose, since no difference was found between the two fractionation technics when the rate of irradiation was 2,500 r/week. The highest dosage group showed poorer results and greatly increased systemic effects. This suggests the possibility that supralethal effect may be related to impairment of host resistance.

OXYGEN THERAPY. E. O. COATES, JR., G. L. BRINKMAN, P. R. DUMKE AND E. W. GREEN. *Postgrad. Med.* 24:60, 1958.

Regarding the accuracy of clinical signs of hypoxia, dyspnea and cyanosis are relatively unreliable indications of lack of oxygen. Increasing pulse rate, restlessness, anxiety and an altered mental state are the most significant indications. Oxygen therapy in high concentration is often useful in conditions in which severe localized tissue anoxia exists, such as surgical shock and severe myocardial or cerebral infarction, for the primary purpose of increasing the oxygen dissolved in the plasma. We believe that administration of prolonged low-flow oxygen is beneficial in certain cases of chronic hypoxia, because of its effect in lowering pulmonary hypertension and because it helps to restore cardiac and pulmonary compensation. A special nasal catheter is employed for the administration of this oxygen. Possible harm from the use of oxygen was emphasized because of its tendency to induce further hypoventilation and carbon dioxide retention in certain patients with chronic hypoxia. The accompanying syndrome of so-called carbon dioxide narcosis is fortunately uncommon, but recognition is important since it is usually reversible. A second possible harmful effect is that of toxicity from the oxygen itself as a result of its prolonged use in a concentration of 100 per cent. Experimental and clinical observations indicate that such exposure may produce an irritant broncho-pneumonia, but that this occurs clinically only under very unusual circumstances. Of the various technics of oxygen administration which have been discussed, the nasal catheter is the method favored for most purposes because of its ease and availability, the good concentration of oxygen obtained, and the absence of carbon dioxide accumulation in the inspired air.

PHOSPHATE DIABETES; A CASE STUDY OF OSTEOMALACIA. B. FRAME AND R. W. SMITH, JR. *Am. J. Med.* 25:771, 1958.

A case report is presented of a patient with vitamin D-resistant osteomalacia. The basic defect was considered to be a reduced renal tubular reabsorption of phosphorus with resulting hypophosphatemia. After lengthy therapy with calcium lactate and large doses of vitamin D was only partially successful, supplemental phosphorus administered orally resulted in marked improvement. Symptoms abated,

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calcium and phosphorus retention increased, and reossification was noted in x-ray films of the demineralized skeleton. Parathyroidectomy was performed but its contribution to the over-all results cannot be stated.

PREPARATION OF THIN UNDECALCIFIED BONE SECTIONS BY RAPID MANUAL METHOD. H. M. FROST. *Stain Technol.* 33:273, 1958.

Sections from 3 μ to over 100 μ thick of fresh, unfixed, unembedded, undecalcified and undehydrated bone are made by grinding 1 to 2 mm slabs of the desired orientation on waterproof carborundum abrasive paper, grit No. 320, 360 or 400. The manner of controlling the section is the crux of the technique. The section is held by wrapping a fresh strip of sandpaper around a 3" x 1" slide and accomplishing the grinding on a used piece of paper. The abrasive points on the fresh paper effectively prevent the section from sliding off the side. The specimen is kept wet with water during the entire procedure. Sections are then stained, and excess surface stain can be ground off in similar fashion. After washing in dilute detergent solution to remove adherent debris, the section is air dried and mounted in any nonacidifying resinous media. The method is suitable for wood and for fruit pits also.

DIABETIC ACIDOSIS. H. L. GREEN AND F. W. WHITEHOUSE. *J. Michigan M. Soc.* 57:1410, 1958.

Patients with diabetic acidosis are critically ill. The diagnosis must be quickly established and treatment initiated. Management should be energetic, and the patient must be carefully followed until he is out of danger. Many complications can occur with or from acidosis, and it is best prevented by rational and careful management of the diabetic patient.

URETHROCYSTOGRAMS; METALLIC BEAD CHAIN TECHNIQUE. C. P. HODGKINSON, H. P. DOUB AND W. T. KELLY. *Clin. Obst. & Gynec.* 1:668, 1958.

More precise indications than a simple history of involuntary loss of urine on sudden exertion and the finding of a cystocele, are necessary in patients suffering from stress incontinence to answer such questions as, what is the basic pathology? Is it neurogenic or anatomic? Why did the previous operative procedure fail? Is conservative or operative treatment now necessary and, if operative treatment is now necessary, which procedure should be selected, and why? Diagnostic knowledge is incomplete and unequivocal answers cannot be given. Routine urologic and gynecologic studies will generally serve to rule out such conditions as bladder calculi, fistula, "false" incontinence of extreme urgency, and chronic infection of the urinary tract. The purely functional, neurogenic, and anatomic causes must be studied by special

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methods. The metallic bead chain technique in roentgen study of urethrovesical relationships has value as a diagnostic aid for the study of the anatomic changes in the etiology of urinary stress incontinence, and is described in detail.

URETHROVESICOPUBIC RELATIONSHIPS AND URINARY STRESS INCONTINENCE. IV. THE UTERINE SUSPENSION SYNDROME. C. P. HODGKINSON AND W. T. KELLY. *Am. J. Obst. & Gynec.* 76:1114, 1958.

Two groups of patients have been presented whose urethrocytopubic relationships showed anterior displacement of the bladder, reduction in the size of the posterior bladder segment, and evidence of posterosuperior extravescical pressure. Urinary frequency, urgency, and stress incontinence were the associated subjective complaints. It appeared probable that these anatomic changes played no more than ancillary roles in the etiology of urinary stress incontinence. Yet, unless they were corrected, successful establishment of urinary control was in jeopardy. Moreover, because of these peculiar urethrovesicopubic relationships, the surgical treatment must be carefully contemplated. Vaginal plastic operations are least likely to be successful. Abdominal procedures which involve hysterolysis and retropubic urethropexy are best. Because the anatomic relationships are opposite to those usually observed in urinary stress incontinence, because they cannot be properly evaluated by clinical means alone, and because combined operative procedures must be employed if success is to be obtained, it has been found convenient to designate these objective signs and subjective symptoms, when occurring concomitantly, as the uterine suspension syndrome.

EFFECT OF ADMINISTRATION OF PHENINDIONE ON BLOOD LEVELS OF PROTHROMBIN, AUTOPROTHROMBIN I AND AUTOPROTHROMBIN II. S. A. JOHNSON, M. J. CALDWELL AND E. M. PRIEST. *J. Appl. Physiol.* 13:411, 1958.

Phenindione was administered to 14 patients in the Cardiology Division. Prothrombin, autoprothrombin I and autoprothrombin II determinations were carried out on plasma and serum samples drawn before administration of the drug, during and following administration. The prothrombin, autoprothrombin I and II all fell in concentration simultaneously. Prothrombin and autoprothrombin I recovered at the same rate, while autoprothrombin II returned to the original concentration much later. The response of the three components to administration of vitamin K₁ was also observed.

RELATIONSHIP OF PLATELET FACTOR 1 AND PLATELET FIBRINOGEN TO PLASMA. S. A. JOHNSON, R. W. MONTO AND M. J. CALDWELL. *J. Appl. Physiol.* 13:406, 1958.

Some platelet factors appear, in the light of our present knowledge, to be

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characterized by activities similar to those in plasma. These platelet activities may be simply 'artifacts,' or a useful and necessary function in the blood coagulation mechanisms may be served by having the activity reside in both plasma and platelets. Two such activities are platelet factor I (accelerator) and platelet fibrinogen or clottable factor. The role of platelet factor I is somewhat clarified by the fact that a normal prothrombin consumption time was found in the absence of plasma Ac-globulin and platelet factor I. These same platelets which lacked platelet factor I were able to pick up Ac-globulin from normal plasma. In another case, the concentration of platelet fibrinogen appeared to be independent of the concentration of plasma fibrinogen, suggesting that these two types of fibrinogen may have some significant difference.

INDUCED CARDIAC ARREST IN OPEN HEART SURGICAL PROCEDURES. C. R. LAM, T. GAHAGAN, C. SERGEANT AND C. MOTA. *Bull. Soc. Internat. Chir.* 17:26, 1958.

After we had adopted the drug acetylcholine as the agent for inducing cardiac arrest, our attention was drawn to the experimental work of Melrose of London. He recommended that the heart be stopped by the intracoronary injection of heparinized blood containing potassium citrate. Because we had discontinued the use of potassium chloride for the reasons outlined above, we were not inclined to try the Melrose technic clinically. We did a few experiments in the laboratory to compare the two methods. The periods of resuscitation were slightly longer with the potassium citrate and there was one instance of intractable ventricular fibrillation.

IS AORTIC STENOSIS CURABLE? C. R. LAM. *Postgrad. Med.* 24:11, 1958.

There are several feasible operations for the relief of aortic stenosis, but the most practical ones are (1) the transventricular dilating procedure for acquired stenosis, and (2) open aortotomy under moderate hypothermia for congenital stenosis. The latter method will probably be applied to more and more cases of acquired disease. Aortic stenosis may not be a curable lesion as far as restoring a completely normal anatomic situation is concerned, but many patients can be improved if there are not too many complicating lesions and if the type of operation is carefully selected.

CLINICAL PATHOLOGICAL CONFERENCE IN A HOSPITAL IN U. S. A., WITH DISCUSSION OF A CASE OF SICKLE CELL ANEMIA. G. LAUBINGER. *München. Med. Wchnschr.* 100:842, 1958.

Postgraduate instruction, modulated through conferences, is common practice in the teaching hospital in the U. S. A., but is not conducted in this manner in Germany. The purpose, organization and extent of these conferences is discussed

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and the protocol is given of a CPC, which probably represents a most valuable teaching exercise. The clinical discussant was Dr. Brinkman, while Dr. Horn discussed the pathological findings.

The patient was a 72 year old negress, who was suffering from arteriosclerotic hypertensive heart disease and who also had sickle cell trait. This latter became symptomatic on air travel but pertinent only after she finally reached a stage of cardiac insufficiency with hypoxia, causing thrombi of sickle cells with pulmonary and cerebral infarctions. An outstanding finding in this case were bone marrow infarctions, which are usually seen in pure sickle cell disease only and not in sickle cell trait.

NEPHROGENIC HYPERTENSION (GOLDBLATT KIDNEY) FOLLOWING OPERATIVE TRAUMA TO THE RENAL ARTERY. R. T. McDONALD, D. E. SZILAGYI AND R. F. SMITH. *Circulation* 18:71, 1958.

A report is given of an instance of malignant arterial hypertension supervening on inadvertent surgical trauma and eventual thrombosis of the right renal artery, and cured by right nephrectomy. The sequence of clinical events, the pathologic findings, and the bioassay of the parenchyma of the removed kidney are interpreted as proofs that the hypertension in this case was a clinical counterpart of the experimental hypertension produced under certain conditions by the constriction or occlusion of the renal artery.

PROGRESSIVE EXOPHTHALMOS DEVELOPING 12 YEARS AFTER THYROIDECTOMY FOR DIFFUSE TOXIC GOITER. J. J. McHUGH AND R. C. MELLINGER. *Ann. Int. Med.* 49:955, 1958.

The development of severe infiltrative ophthalmopathy and localized pretibial myxedema 12 years after subtotal resection of a toxic diffuse goiter suggests that the physiologic disturbance of Graves' disease had either persisted or recurred. However, the patient was euthyroid and responded to the administration of thyroxine with a normal decrease in thyroid function, demonstrating an intact pituitary-thyroid relationship. This evidence is interpreted to indicate that the exophthalmos-producing factor is not thyrotropin, and is independent of both thyrotropin and thyroid hormone levels.

CONGENITAL DISORDERS OF THE GONADS. R. C. MELLINGER. *Postgrad. Med.* 24:43, 1958.

Three groups comprise the known congenital gonadal anomalies: gonadal dysgenesis, adrenal virilism and hereditary male pseudohermaphroditism due to maternal antitesticular factors. Individual patients can be classified only by determination of

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their sex in several different spheres: genetic, by chromosomal study; gonadal, by histologic study; somatic, by anatomic study; and endocrine, by hormonal study. Anomalous sexual development should be considered an imbalance of the normal male-female relationship. Anatomically, endocrinologically and psychologically, the human being is normally intersexual. Only in the sphere of the chromosome is a person all male or all female; this finding may prove ultimately to be more a delusion than a fact as more refined analysis of sex chromatin is obtained. At present we do not recognize abnormalities of the sex chromatin, but at all subsequent levels of development — the differentiation of the fetal gonad, the development of the genital ducts, the secretion of the sex hormones, or the orientation of the psychologic sex drive — imbalance of the normal male to female ratio may occur, resulting in clinical sexual anomalies.

*STRUCTURE OF SCHMIDT'S ALUMINUM HYDROXIDE GEL. P. S. SANTOS, A. VALLEJO-FREIRE, J. PARSONS AND J. H. L. WATSON. *Experientia* 14:318, 1958.

These results show that the particles which constitute the solid phase of Schmidt's gels are different from those of the Willstätter's C-gamma gels, but are similar to those of the C-beta gels, which are also composed of fibrils, having a Boehmite structure, shown in a previous paper, formed by condensation polymerization of the amorphous aluminum hydroxide molecules of the C-alpha gel. Their X-ray diffraction data do not coincide exactly with the data of well crystallized Boehmite because the fibrils are exceedingly small and friable and are neither completely polymerized nor oriented. After autoclaving, Schmidt's gels do not change spontaneously into Bayerite and Gibbsite which constitute the C-gamma gels, and from this point of view they are different from the C-beta gel. This stability of crystalline structure, of particle size, and of shape in Schmidt's gels make them superior to Willstätter's C-beta or C-gamma gels for preparation of adsorbent. In addition to the ammonium alum, other aluminum salts, like the chloride, the nitrate, or the acetate, can be used for preparing gels composed of Boehmite fibrils, but the fibrils in these are thicker in diameter and have therefore a smaller surface area than those from Schmidt's gel.

DETERMINATION OF SEX BY SEX CHROMOSOMES. J. P. PRATT. *Clin. Obst. & Gynec.* 1:686, 1958.

Genetic sex is established at the time of fertilization of the ovum. The gonadal sex, secondary sex characteristics, the mental and emotional sex may or may not conform to the genetic sex. Determination of sex by the chromatin pattern refers only to the genetic sex. When a discrepancy of sex manifestations is discovered, determination of the genetic sex is a valuable aid to the interpretation of the discrepancy.

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This new field of study is fascinating, but the present discussion is limited to the methods of determining the genetic sex.

Study of the nuclear morphology of the neural cells of the cat has led to the discovery of a chromatin pattern in the tissues of the female which differs from that in the male. The sex-specific chromatin pattern in neural cells was soon found to exist in all the tissues of the body of other mammals including man. The intermitotic nuclei of females contain a mass of sex chromatin that is characteristically planoconvex in shape and is situated adjacent to the inner surface of the nuclear membrane. The chromatin mass may be found in about three fourths of the female nuclei, but the nuclei of males seldom contain a similar mass. These chromatin masses are illustrated in skin from a normal woman and in leucocytes.

SERUM TRANSAMINASE AND SERUM IRON IN LIVER DISEASE. J. A. RINALDO AND D. G. REMP. *Postgrad. Med.* 24:48, 1958.

A serum transaminase value greater than 250 units by the method employed in the present study was strong evidence that hepatitis was present, while a level greater than 300 units was almost diagnostic. If SGO-T and conventional liver tests are equivocal, serum iron concentration should be determined. This is feasible, since serum iron levels generally remain elevated longer than those of serum transaminase. Serum iron values greater than 180 μ g. are suggestive of hepatitis, and those greater than 200 are diagnostic of hepatitis when hemolytic anemia and hemochromatosis have been excluded. An increased transaminase level is more effective than increased iron concentration for determining the presence of hepatitis. Analysis of iron levels adds to the effectiveness of conventional liver tests in making this diagnosis. Determination of serum iron concentration is technically easier than that of serum transaminase. In a laboratory in which transaminase analyses cannot be performed, it may be possible to utilize the serum iron test.

WHIPPLE'S DISEASE — OBSERVATION ON SYSTEMIC INVOLVEMENT. I. CYTOLOGIC OBSERVATIONS. J. C. SIERACKI. *A.M.A. Arch. Path.* 66:464, 1958.

Study of the tissues of patients with Whipple's disease has shown a widespread involvement with cells containing a characteristic cytoplasmic particle. The presence of these cells in the peripheral lymph nodes allows the diagnosis to be made during life without recourse to laparotomy. Cytologic studies of the material from seven cases of Whipple's disease demonstrated a characteristic periodic acid-Schiff (P. A. S.)-positive cytoplasmic particle in affected cells in all cases. The cells containing these sickle-form particles are described in some detail.

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CONGENITAL FUSION OF THREE LUMBAR VERTEBRAL BODIES. S. STANISAVLJEVIC AND E. G. ST. JOHN. *Radiology* 71:425, 1958.

A single case of congenital fusion of three lumbar vertebral bodies has been presented. An associated anomaly was hypoplasia of the eighth thoracic vertebra, with congenital fusion of two ribs on the right at this level.

THE APPLICABILITY OF ANGIOPLASTIC PROCEDURES IN CORONARY ATHEROSCLEROSIS: AN ESTIMATE THROUGH POSTMORTEM INJECTION STUDIES. D. E. SZILAGYI, R. T. McDONALD AND L. C. FRANCE. *Ann. Surg.* 148:447, 1958.

In an inquiry into the feasibility of applying direct surgical technics to the correction of the occlusive process in coronary atherosclerosis, the distribution and state of advancement of the atherosclerotic lesions were studied in 190 hearts after injection with a barium-glycerine mixture at autopsy. Seventy-six of these specimens (all from cases without clinical arteriosclerotic heart disease) showed no occlusive changes of importance. Among the 114 hearts with occlusive lesions, 35 came from patients with no clinical manifestation of coronary atherosclerosis; 79 of the specimens were obtained in cases with clinical atherosclerotic heart disease of which 23 had had angina pectoris as their sole or main clinical manifestation.

The earliest and most sharply localized occlusive lesions were found in the subclinical group; the most advanced and widespread involvement occurred in the clinical group with angina. In general, it appeared that coronary atherosclerosis when clinically manifest tends to be generalized. Judged by technical criteria which take into consideration the topographic accessibility, luminal size and outflow characteristics of the main coronary branches, 43 per cent of the hearts in the *subclinical* groups were judged inoperable; 17 per cent of the hearts in the same group were regarded as capable of palliation and 40 per cent as capable of cure by direct surgical means. In the *clinical* group the theoretical rate of inoperability was found to be 44 per cent and the rate of curability 13 per cent. The importance of a safe and reliable clinical method of coronary angiography for the realization of the potentialities of angioplastic procedures in the treatment of these lesions was emphasized.

THE CLINICAL USE OF AN ELASTIC DACRON PROSTHESIS. D. E. SZILAGYI, L. C. FRANCE, R. F. SMITH AND J. G. WHITCOMB. *A.M.A. Arch. Surg.* 77:538, 1958.

An arterial substitute with elastic qualities is described. Woven of plain Dacron yarn in the woof and elasticized (Helanca) Dacron yarn in the warp as straight tubes and bifurcations, the prosthesis is seamless, smooth-walled, finely porous, light and soft, and has the ability to elongate. It is easy to procure, store, and sterilize. In

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animal experiments using long aortic bypass implants, during 11 months of observation, the elastic Dacron prosthesis showed an excellent rate of patency, even when traversing a tortuous course; arteriogenesis around the implants was good and tissue reactivity low. During nine months of implantation the initial tensile strength of the prostheses was essentially unchanged. In spite of unfavorable criteria of case selection, during nine months of experience, in 43 clinical cases, the prosthesis yielded a patency rate only slightly below that obtained by us with homografts. The assumption that the *late* patency rate of these prostheses will be better than that of homografts is supported both by theoretical considerations and by experimental evidence, but it will not be proved or disproved until the results will have been followed for much longer periods of time.

EXPERIMENTAL AND CLINICAL UTILIZATION OF A PROSTHESIS FOR REPLACEMENT OF THE TRACHEA. R. E. TABER AND L. TOMATIS. A.M.A. Arch. Surg. 77:576, 1958.

Only infrequently will the surgeon be called upon to replace extensive tubular segments of the trachea. When the extent of the resection exceeds four to five tracheal rings in length, the need for prosthetic reconstruction arises. Previously reported tracheal substitutes which have received clinical trial consisted of nonporous metallic and plastic tubes or wire mesh covered with autogenous tissue, such as fascia or dermis. The postoperative problems involved with the use of most of these have usually occurred late in this period. These difficulties were secondary to loss of prosthesis fixation, with resulting tracheostenosis due to contraction of the tracheal ends or migration of the tubular foreign body within the tracheal lumen. It would appear that one solution of this complication is the use of a prosthesis fixation method which is ultimately dependent upon infiltration by host tissues, resulting in incorporation of the tracheal substitute into the remaining airway as a permanent structure. Clinical utilization of this tracheal substitute has been made in the emergency management of a 37-year-old patient in whom it was necessary to replace the entire thoracic trachea which was involved by reticulum-cell sarcoma. A satisfactory airway resulted, until the patient died on the 22d postoperative day of hemorrhage due to erosion of the innominate artery by neoplasm.

