3-1957

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The central tegmental bundle is a complex of fibers of varying lengths, partly chains of neurons linking to some extent the diencephalic and mesencephalic centers, and chiefly a group of long fasciculi enriched with the mesencephalic components, between the tegmentum of the brainstem and the inferior olive. During their course, these fascicles are joined by rubro-olivary, tegmento-olivary and dentato-olivary fibers. The combined bundle ends in the inferior olivary complex, in the central reticular substance and in the nucleus ambiguus. A few fibers continue into the cervical cord.

The stimulation of the central tegmental bundle by mediation of the stereotaxic instrument elicited movements of the palatal musculature, raising and deviation of the uvula and elevation and contraction of the soft palate toward the side stimulated. These movements were sometimes accompanied by a bilateral rhythmic contraction of the palate similar to the palatal nystagmus seen in human patients. These responses were frequently associated with changes in respiratory frequency, and occasionally with ocular or facial responses.


A blind comparative study of 800 cases of intravenous pyelography with use of sodium acetrizoate (Urokon sodium) 50% and 70%, sodium diprotizoate (Miokon sodium) 50%, diatrizoate (Hypaque sodium) 50%, and a combination of the sodium and methylglucamine salts of ditrizoate (Renografin) 76% is reported. The types and percentages of reactions and the quality of the resulting pyelograms are recorded. The results seem to indicate that there are significantly fewer reactions to be expected with the use of sodium diprotrizoate 50%, diatrizoate sodium 50%, and Renografin 76% than with the use of sodium acetrizoate 50% and 70%, whereas the quality of the resulting pyelograms is approximately the same for all of the media used in the study.


The thinking regarding the surgical treatment of ulcerative colitis has now crystallized into the concept that when operation is indicated a permanent ileostomy should be fashioned and the entire colon and rectum should be removed. Elimination of the perineal portion of the operation avoids the change in position of the patient which is often conducive to lowering of blood pressure and the onset of shock. Furthermore, there is less blood loss since there is only minimal perineal dissection. The resulting perineal wound heals promptly, thus eliminating the long delay usually
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associated with perineal resection. This technic has been performed on twenty-nine patients (sixteen one-stage operations and thirteen two-stage operations). There were no immediate postoperative deaths in the series, but one patient died on the twenty-third postoperative day following a secondary operation for intestinal obstruction due to volvulus. One-stage removal of the entire colon, rectum and anal canal through an abdominal incision is a feasible operative procedure in selected patients.


An operative procedure for surgical relief of persistent temporomandibular joint pain has been developed. Twenty patients who had failed to respond to conservative therapy we subjected to high mandibular condylectomy with preservation of the meniscus, condylar neck and ligamentous attachments. All these patients have had complete and lasting relief from pain, and function has returned to normal rapidly with no evidence of facial nerve damage. Very slight deviation of the mandible in its extreme open position was observed in 50 per cent of the patients, but was too insignificant to be of clinical importance. Operative interference is indicated only when comprehensive conservative therapy has failed to eliminate joint pain.


The clinical purview of the fibrinogen-fibrin conversion syndrome has rapidly extended. Identified first with abruptio placentae, the syndrome soon included long intruterine retention of a dead fetus and amniotic fluid embolism. In the realm of suspicion now fall isolated clinical conditions, such as the generalized Shwartzman reaction, Sheehan's disease, bilateral renal cortical necrosis, hemolytic blood reactions, and trauma, either surgical or accidental. Theory holds thromboplastin to be the alleged etiological agent and hyperthromboplastinemia the physiopathologic mechanism. Shock is assumed to be caused by occlusion of the terminal arterioles with insoluble fibrin gel; and hemorrhage, from critical depletion of fibrinogen. For perspicuous understanding of thromboplastin-induced disease, agreement upon the definition of terms and the differentiation of fact from fancy are necessary. It is essential to ask such questions as: what is thromboplastin, how and where is it formed; what is fibrinogen, where and what controls its production; and, what are the physical properties of fibrin and its relation to embolization? Upon the physiologic variations of thromboplastin, fibrinogen and fibrin and their quantitative interrelations depend the clinical types of the fibrinogen-fibrin conversion syndrome. The designation of this condition is unsatisfactory as at least eleven terms are in use. The appellation "The Fibrinogen-Fibrin Conversion Syndrome" is suggested.


A review of the literature concerning hemophiliacs, with lesions of the central nervous system requiring surgical intervention, together with three cases of our own,
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is presented. Our cases were (1) Epidural clot over the lower cervical spinal cord requiring laminectomy, (2) Subdural right hematoma with left hemiparesis, (3) Hematoma in right posterior frontal region of the brain. A surgical technic for reducing operative and postoperative hemorrhage in hemophiliacs is suggested in which operative sites are exteriorized so that local measures to control hemorrhage may be applied.


The clinical records, autopsy protocols, gross and histologic material and microbiologic data from 88 patients with fungal infections were studied. The material was derived from 15,845 consecutive autopsies performed between 1919 and 1954. The data were evaluated by time periods in order to assess the incidence since the introduction of antibiotic therapy, cortisone, etc., and to evaluate the significance of these fungal infections. Secondary fungal infections of varying severity were noted to have increased significantly since 1947. These infections had a definite adverse of hematologic disorders were noted to be most susceptible to secondary fungal infections.


Since 1952, we have seen five cases of eosinophilic granuloma of the skull. It is important to consider the possibility that this disease exists when there is any localized tenderness of the scalp or any lytic lesion of the skull. Since eosinophilic granuloma of the skull is frequently solitary and benign and carries a good prognosis, accurate diagnosis should be made by surgical biopsy, with removal of a specimen large enough for microscopic examination. The treatment is uniformly successful with roentgen therapy. Usually, a course of six exposures of 200 r in air is sufficient. The patient's scalp pain is relieved immediately after biopsy and irradiation. The regrowth of the bone of the cranium is usually demonstrated roentgenographically within six months.


A worker is judged and placed in industry on the basis of his ability for a certain job. His inability to do other jobs is completely irrelevant. In evaluating the disabled person for job placement this primary principle should be kept foremost in mind. At the annual meeting of the American Congress of Physical Medicine and Rehabilitation in 1955, I presented a film entitled "Amputees In Industry." This film was a documentary case history study of five amputees, showing in each case the amputation stump, the prosthesis, and finally the patient at work in industry. The five patients shown in the film are (1) Bilateral Below-Elbow Amputation, (2) Bilateral Above-Knee Amputation, (3) Unilateral Above-Elbow Amputation, (4) Unilateral Below-Knee Amputation, and (5) Unilateral Below-Elbow Amputation. These patients, representative of a large group of such amputees, were selected for a documentary film designed primarily to demonstrate to the trained observer the details of operation of prostheses in industry. The film is obtainable for loan through C. Leslie Mitchell, M.D. Division of Orthopedic Surgery.
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"COMBINED TRACER AND VACUUM TECHNOLOGY FOR THE STUDY OF MICRO-WEIGHT VACUUM DISTILLATIONS OF METALS WITH W<sup>95</sup>, CR<sup>51</sup> AND AU<sup>198</sup>. L. E. PREUSS. IN VACUUM SYMPOSIUM TRANSACTIONS. SECTION ON FUNDAMENTAL DEVELOPMENTS IN VACUUM RESEARCH, COMMITTEE ON VACUUM TECHNIQUES, July 1956, p. 7.

The vacuum distillation technique involving crucible charges of small total mass for purposes such as shadowing in electron microscopy has attained some degree of importance. Quantitative study of this phenomena as it is effected by variables such as the degree of vacuum or the distillation temperature is made difficult by the micro masses used (as low as .1 mg) and the extremely tenuous, resultant condensed metal films which defy conventional quantitative determinations. Thickness of the condensates studied was of the order of one angstrom. Radioactive tracer methodology can be shown to display a useful sensitivity in the assay of the films resulting from the microdistillation process. Tracer assay limits are shown to exceed, by a factor of 10<sup>6</sup>, the limits ordinarily found in a coherent metal film. Distilland deflection, as a function of pressure, is studied by gross and micro assay and is shown by the tracer technic to interfere with perfect geometrical shadowing.

An outline is made of the potentially useful synthetic isotopes for vacuum tracer studies. Rules and limits for selection of isotopic qualities in experimental design are outlined. Some simple relations covering experimental activity levels are discussed, (e.g.; C=D • E). **Requisites for target material for special pile irradiation are explained. The experimental method used for this film thickness determination is derived and some examples of dispersion patterns and thin film determination are given.

The tracer technic is used here to elucidate some phenomena of the shadowing principle in vacuum distillation. Microdensitometry, autoradiography, electron microscopy, visual assay and calibration by the radioactive counting system all develop correlative results.

Some additional applications for the tracer tool in vacuum studies are outlined. These include: vapor pressure studies, investigation of pumping mechanisms, fractional distillation of alloys, pump back streaming and trapping phenomena, determination of absorbed and adsorbed vacuum contaminants, activation analysis of trace contaminants, etc.

Health physics aspects and certain essentials of the vacuum tracer methodology are explained in detail. A summary is made of the problems, errors, and applications of such tracer assays.

**C=microm curies of total tracer.
D=(d<sup>1</sup> • d<sup>2</sup>), where:
d<sup>1</sup>=experimental dilution through distillation.
d<sup>2</sup>=dilution in final radioactive assay preparation.
E=detector efficiency (expressed in terms of activity units per arbitrary count rate response.)

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A unique lead shield for inventoried storage of radioactive Cr	extsuperscript{51} nodules, Au	extsuperscript{198} foil and W	extsuperscript{185} wire is described. It consists of a $\frac{3}{4}$" lead walled, rectangular, box shield with dimensions of 2$\frac{1}{4}$" x 4" x 8". Six drawers in horizontal array open on one 2$\frac{1}{4}$" x 8" face. Each contains numbered receptacles for separate storage of small radioactive metal fragments. Excessive dosage during loading is obviated by a movable lead nodule which provides a shielding tunnel accommodating one drawer. Lucite drawer bodies which are easily machined to any shape are described. Gamma ray dosage, from metallic Au	extsuperscript{198} foil, to the operator’s hands has been reduced to two to four percent of that from the unshielded source at the shield surface. Dosage has been reduced by about 95 percent during the loading and unloading procedure, when contrasted with the single lead keg storage system previously used.


The authors report 8 cases of primary invasive carcinoma of the appendix and review the literature of the previously reported cases in which they found 42 invasive and 10 intramucosal primary cancers. The difference in prognosis of the intramucosal and invasive tumor and the need for early radical therapy in the latter is stressed.


1. Succinic dehydrogenase has been isolated from beef heart mitochondria as a soluble protein in a state approaching homogeneity by physico-chemical criteria. The over-all purification is about 100-fold compared with a mitochondrial acetone powder.

2. The enzyme is a ferroflavoprotein containing 4 atoms of ferrous (non-hemin) iron and a mole of flavin per mole of protein (200,000$^\text{g}$ gm.). The dehydrogenase may be isolated from aged starting material with 2 atoms of iron per mole and half the specific activity.

3. Among the common electron acceptors, only the following function with the dehydrogenase, at the relative rates indicated in parentheses: phenazine methosulfate (100), ferricyanide (39), O$_2$ (0.02). The first two of these acceptors react via the iron moieties, whereas O$_2$ seems to react directly with the flavin.

4. The Q$_0^2$ has been measured as 20,000 and the turnover number as 3000 under the standard assay conditions.

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5. The properties of the isolated dehydrogenase agree with those previously described for mitochondrial and other particulate preparations of the enzyme, except for properties related to the absence of contaminating hemoproteins. At 38° the pH optimum is 7.7; the Km for succinate is 1.3 x 10^-6M at 38° and 5.2 x 10^-4M at 21°. Oxalacetate, malonate, and fumarate are competitive inhibitors. Antimycin A and BAL do not inhibit the dehydrogenase. The dehydrogenase is highly sensitive to sulfhydryl reagents, p-chloromercuribenzoate inhibiting it in a reversible manner and the substrate protecting the enzyme from this type of inhibition.


With a view to identifying the causative factors in the loss of function of formerly open grafts after grafting operations for peripheral (aortoiliac and femoro-popliteal) occlusive arterial disease the postoperative course of 120 such operations was reviewed and analyzed. Twenty-three or 19.1 per cent of the grafts became occluded immediately after operation. The remaining 97 grafts were followed clinically and angiographically. During the subsequent 33 months 21 more grafts lost their function. Seven of them were re-explored and six of the re-explored grafts were biopsied. From the evidence obtained by these studies the most common cause of late graft failure was the extent and severity of the preexisting arterial disease either through postoperative progression or owing to incomplete excision. Although technical variations in the type of graft placement and technique of anastomosis did not seem to be the primary cause of the failures, the technical superiority of procedures utilizing end-to-side distal anastomosis was confirmed, and collateral evidence suggested that this type of anastomosis may delay narrowing near the suture line. Occlusions the cause of which was traced to intrinsic defects in the grafts were uncommon but in a considerable number of cases (17 per cent) progressive angiographic changes were noted in the arterial substitutes that may in time lead to occlusion.


Segments, 18 to 24 cm. long and 8 to 10 mm. in diameter, of lyophilized, chemically sterilized bovine heterograft, and of seamless woven tubes of teflon, bleached teflon, and nylon were implanted in dogs and observed for periods of from 2 weeks to 13 months. The heterografts showed a varying and capricious behavior, about one-half of the implants yielding satisfactory results, about one-third rupturing, and the remainder undergoing moderate to advanced degenerative changes. During the periods of observation, prostheses of nylon, teflon, and bleached teflon of the stated
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dimensions proved to be satisfactory arterial substitutes. The few failures observed with these replacements appeared to be caused not by the unfavorable biologic behavior of the given plastic but rather by minor and virtually unavoidable technical errors that resulted in various degrees of wrinkling. Thus the importance of the lack of elasticity of these plastic prostheses that render the accuracy of their insertion a critical factor is again emphasized. On account of the minimal tissue reaction it elicits, as well as owing to its nonwettale and durable qualities, the seamless teflon prosthesis offers distinct advantages as a vascular substitute.


The cure of metastatic cancer is a major challenge to modern medicine. Because the etiology is unknown, we have been forced to treat cancer with only limited success, by surgical extirpation, radiation therapy, or a combination of the two. Under trial are various chemicals, but the results have not been encouraging. Early diagnosis and destruction of the primary tumor and the immediate lymphatics constitute the rational limits of ideal modern therapy. If improvement in survival is to be achieved the diagnosis must be made more promptly, the surgery must be more radical, and radiation therapy more effective. New modalities of therapy are objects of a never ending search. The following protocol for laboratory investigation was adopted. Rabbits weighing between 3,600 and 4,500 grams were used. The site selected for injection was the left inferior thoracic mammary gland. Injections were made under sodium pentothal anesthesia. The breast areas were shaved and painted with 1 per cent hexachlorometacresol solution. The project was divided into three phases. The first phase was characterized by the injection of 4 per cent direct sky blue colloidal dye solution; the second phase, by injection of nonradioactive colloidal gold solution with and without hyaluronidase solution; and the third, by injection of Au\(^{198}\). The investigation showed that the maximum radiation was delivered to the regional lymph nodes. The concentration of radioactive gold in the nodes on the basis of calculated dose indicated a new order of magnitude in terms of radiation dosage. Examinations of the sections of lymph nodes revealed micropathologic changes which were more pronounced than were produced by external radiation. The rate of migration was sufficiently rapid to minimize severe local reaction at the site of injection. The therapeutic use of radioactive gold would seem to be quite safe. A minimum amount of radiation was delivered to the spleen, liver and kidney. Patients under therapy and laboratory animals have shown few untoward effects. The greatest hazard to personnel in the handling of radioactive gold occurs at the time of injection.