by Griffith is considered one of the greatest advances in anesthesia, Griffith himself suggested that Smith should expand the scope of his book to document the curare story from the beginning.

Heeding this advice, Philip Smith set out to elucidate the transition of curare from a jungle poison to the most useful adjuvant in anesthesia. He traveled extensively. In San Francisco, he examined Gill's field manuals and other unpublished documents at the Guedel Anesthesia Center. During his visit he met Mrs. Gill, who told him details previously not available about Richard Gill's expeditions.

The book combines scholarly documentation with enthusiasm, wit and humor. It will be enjoyed by anyone interested in the medical community, and would be a tasteful gift.

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Experience in Hepatic Transplantation. By THOMAS E. STARZL. Philadelphia, W. B. Saunders, 1969. $37.50.

Dr. Starzl and his contributing authors have presented a detailed, comprehensive, and authoritative review of their experiences with clinical hepatic transplantation from March, 1963 through April, 1969 at the Denver Veterans' Administration Hospital and University of Colorado Medical Center. The Denver group has pioneered in liver transplantation, and has accumulated an experience that greatly exceeds that of any other medical center. Twenty-five patients received orthotopic grafts and four received auxiliary transplants during the period reviewed.

The chapters on donor and recipient operative technique, anesthesia, and intra- and postoperative complications and care are particularly well written and will be of special interest to anesthesiologists. The operations are long (up to 18 hours), difficult, and attended with major blood loss. Dramatic hemodynamic changes occur in orthotopic operations when both the inferior vena cava and the portal vein are temporarily cross-clamped during the anhepatic phase. There are major derangements in metabolic processes, including elaboration of clotting factors, control of blood sugar, and maintenance of acid–base balance. The extent of the derangements is related to the degree of ischemic injury sustained by the graft prior to revascularization.

Of the 25 patients who received orthotopic transplants, seven died within 22 days from combinations of hemorrhage, sepsis, hepatic failure, and pulmonary embolism. The most important contributing factor in these early failures was prolonged ischemia of the donor liver. Improved organ preservation techniques greatly reduced the ischemic injury for the subsequent 18 orthotopic transplants. Ten survived more than 100 days and three for more than a year. Two patients had received second orthotopic transplants after rejecting the initial ones; both were still alive 324 and 394 days after the first transplants.

The primary diseases in the group of 25 recipients were biliary atresia (12 cases), hepatic carcinoma (11 cases), alcoholic cirrhosis (one case), and postnecrotic cirrhosis (one case). Of the 11 patients whose primary disease was hepatic carcinoma without evidence of metastases, seven died within 39 days; one had metastatic cancer at autopsy. Lethal metastases appeared in the four, who survived 143 to 400 days. On the basis of these results, the authors seriously question the future role of hepatic transplantation in treatment of patients whose primary disease is carcinoma of the liver.

The review of auxiliary hepatic grafts includes data from four cases in Denver and five from other centers. The results are disappointing in that no recipient survived for more than 34 days. Although at first glance the procedure would seem ideally suited for victims of non-neoplastic hepatic disease, auxiliary transplantation presents two special problems. The abdomen does not readily accommodate an additional organ as large as the liver, and abdominal overcrowding has contributed to pulmonary complications. In addition, there appears to be competition between the graft and the host's own liver for factors that are derived from the portal circulation; auxiliary hepatic grafts tend to atrophy. Several additional problems common to both orthotopic and auxiliary grafts, such as the frequent occurrence of septic hepatic infarcts, the relative intolerance of liver recipients (compared to kidney recipients) to azathioprine and the extreme difficulty in controlling rejection with the immunosuppressive agents that are currently available, are reviewed.

Although clinical outcome and the degree of tissue histocompatibility showed no correlation for hepatic transplants, the authors are optimistic that tissue typing will become increasingly important in the selection of liver donors, as it is in the selection of kidney donors. For the present, hepatic transplantation remains an investigative procedure, but the experiences in Denver have laid the groundwork for transition to a therapeutic procedure. That transition waits mainly for improvements in tissue typing and a new "order" of immunosuppression.

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Physiology of Spinal Anesthesia. Second edition. By NICHOLAS M. GREENE. Baltimore, Williams and Wilkins, 1969. Pp. 243. $9.75.

The first edition of this book appeared in 1958. Its avowed purpose was to review and evaluate the literature "dealing with the physiological response to spinal anesthesia." While interest in spinal anesthesia has waned steadily during the intervening decade; a victim of the increasing es-