sence of dehydration. Alternation of dextrose with the physiologic solution of sodium chloride obviated the changes in blood dilution, weight gain and occult or visible edema occurring with physiologic solution of sodium chloride alone. The indiscriminate use of intravenous fluids, especially for persons with any cardiovascular defect, should be discouraged and the safeguards suggested be more strictly adhered to." 17 references.

J. C. M. C.

RAPOPORT, BORIS: *Experience with Nupercain for Spinal Anesthesia.* Anesth. & Analg. **19**: 154–156 (May–June) 1940.

In line with the advance in general anesthesia, spinal anesthesia has progressed by the development of new drugs and safer methods of their administration.

Nupercain has been used for several years with great satisfaction both as to length of anesthesia and absence of marked reactions. It is a white crystalline powder readily soluble in water and a derivative of the quinoline group. In solutions of even slight alkalinity the drug decomposes, and so must be kept slightly acid. Repeated sterilization does not decompose the drug.

It is generally accepted that nupercain is twenty times as toxic as procain in man, but has the advantage of being very effective in high dilutions which are much less toxic than the usual solution of novocain.

The technic used is that of Howard Jones as modified by Sebrechts. Morphine grain ⅙ and scopolamine grain $\frac{1}{200}$ are given subcutaneously one hour preoperatively. With the table horizontal and the patient on his side, the puncture is made in the second, third, or fourth interspace, according to the site of operation. The stylet is replaced after evidence of spinal fluid is obtained, and with the needle in place, the patient is turned carefully on his abdomen.

A dilute solution of nupercain (1:1500) is employed. This is injected in divided doses of 5 cc. at five minute intervals, allowing ample time for observing the reaction on the patient, as evidenced by his appearance, pulse, respirations, blood pressure, and the level of anesthesia obtained. The injection should be done slowly with the nupercain previously warmed to body temperature. If there is no evidence of any undue reaction or the desired level of anesthesia has not been reached, a maximum of 20 cc. is injected.

The patient remains on his abdomen for five minutes after the last dose is given. When turned on his back the patient should be placed in slight Trendelenburg position. The slow injections and Trendelenburg position contribute to the patient's safety and prevent postoperative headaches.

R. E. E.

GIFFORD, J. H., and WILKINSON, F. A. H.: *A Comparative Study of Three Spinal Anaesthetic Agents: (a New Technic for Nupercaine).* Canad. M. A. J. **44**: 128–133 (Feb.) 1941.

"Since the remarkable return to favour of spinal anaesthesia in 1928 a number of spinal anaesthetic agents have been used with varying degrees of success. Of the many agents used three have received the most popularity: novocaine, pontocaine and nupercaine. We present these for comparative study. The following is a report of 696 consecutive spinal anaesthetics. . . .

"Of these, pontocaine was used for 477 operations, nupercaine for 161, and novocaine for 58. . . . By far the greater number of our nupercaine cases were done by the sitting-up method. The usual technic employed differs in no essential from that prescribed by Eth-

erington-Wilson, except that of dosage and time allowance. The maximum dosage of the nupercaine solution to be injected was calculated by allowing 1 cc. of nupercaine solution for each inch of back length, as measured from the spinous process of the seventh cervical vertebra to the interiliac line, with the back in full flexion, up to a maximum of 20 cc. of nupercaine. Smaller doses were employed for poor risk patients. It has been found by measuring adult backs in this manner that the length varies between 16 and 22 inches. This obviously necessitates a different time allowance for the nupercaine to rise, proportionate to the length of the back. . . . Pontocaine was administered in the form of 2 cc. of 1 per cent pontocaine HCl made definitely hyperbaric by the addition of 2 cc. (or equal parts) of 10 per cent glucose in normal saline solution. It is our belief that the anaesthesia comes on more rapidly with the addition of the glucose-saline mixture and that the height of the anaesthesia is more easily controlled by this method. . . . Proper and adequate preoperative medication is essential to successful spinal anaesthesia. . . . By the judicious use of ephedrine sulphate before the spinal anaesthetic is given we find that we have very little cause to employ adrenalin or pitressin-ephedrine mixture during the operative course of the anaesthetic. . . .

"We believe that spinal anaesthesia, when administered by experienced hands, is ideal for all surgical operations below the diaphragm because of its relative safety and because it affords ideal working conditions for the surgeon. . . . Of the three spinal anaesthetic agents employed, we believe that pontocaine is the best all-around agent because of its simplicity of administration, ease of control, duration and low incidence of failures. Nupercaine, although more dangerous, definitely has a place in spinal anaesthesia, particularly for prolonged upper abdominal operations, and for the operation of combined abdomino-perineal resection of the rectum. Novocaine, although supposedly less toxic than the other agents, is attended by a higher incidence of postoperative headache, and the duration of anaesthesia which it produces is inadequate for many surgical procedures." 5 references.

J. C. M. C.

GAYSINSKIY, B. E.: *Rivanol Novokainovaia Anesthizia (Kombinirovannii Metod Anestizii i Glubokoi Antiseptiki)—Use of Rivanol (Acridine Dye) and Procaine Hydrochloride (Novocain in Combined Method of Anesthesia and Deep Antiseptic).* Khirurgia **6**: 13–15, 1939.

The problem of anesthesia in military surgery is one of the most important questions of our day. Many methods, such as inhalation anesthesia and intravenous anesthesia, are proposed by different authors but most of them are still in the process of research, and the use of novocain locally still predominates.

There is a question of how to prevent spreading of infection in patients with purulent wounds or deep abscesses. To solve this problem, the author recommends the use of novocain dissolved in rivanol. He uses ½ per cent solution of novocain in freshly made 1:2000 rivanol solution because rivanol has a tendency to deteriorate under the influence of light. Rivanol is known for its baetericidal properties and is much used in medical practice. Usually rivanol is employed in 1:1000–1:2000 solution without any complications, but the solution of 1:400 causes irritation of tissues and necrosis. Its use is not recommended in kidney diseases.

The technic of anesthesia is very simple:

(1) If the operation must be per-