

THE
CYCLOPEDIA of MEDICINE

Revision Service
1940

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Preface

THE purpose of this Service Volume is to make available to the medical profession a critical review of the noteworthy accomplishments in Medicine, Surgery and the various Specialties that have marked the past year. In this volume no attempt has been made to furnish a complete bibliography of medical literature for this period. The value of a review of this kind depends upon the discriminating judgment and ability of the reviewers. The Editorial Board responsible for this volume, itself thoroughly experienced in the production of such a work, is fortunate in having had the aid of a group of contributors who are not only outstanding in their respective fields of medical endeavor but are reliable critics who have a clear understanding of the needs of the general practitioner.

The material contained in this volume has been arranged in a concise and readily available form which should render it of additional value to those who depend upon this Service Volume for their information on the progress of medicine. Under the main headings of Medicine and Surgery will be found the generally accepted subdivisions of those subjects. These are followed by sections devoted to Obstetrics, Pediatrics, Ophthalmology, Otorhinolaryngology and the other well recognized specialties.

Throughout the volume, treatment is emphasized. Therapeutics is dealt with in its broadest sense, special sections being devoted to Physical Therapy, Psychotherapy, Dietotherapy as well as to the Newer Drugs. Under the latter heading will be found an adequate discussion of Sulfanilamide and its allied compounds that bid fair to revolutionize the treatment of many acute infections as well as pneumonia. The chapter on Dietotherapy is of unusually practical value because of the number of specific diets that are included. The rapid and ever changing status of Endocrinology is carefully discussed. The steadily increasing information about vitamins is critically analyzed.

Surgery in its various phases, but more especially Abdominal Surgery, as always, is accorded a prominent place in this Service Volume. Modern anesthesia, the present conception of cancer, the various advances in endoscopy and radiotherapy, peripheral vascular disease, the various forms of shock treatment now employed in neuropsychiatry are all accorded special consideration not to mention innumerable other subjects of equal contemporary importance that are carefully discussed.

The publishers are to be congratulated upon the pleasing appearance of this volume which is illustrated with unusual generosity. The thanks of the Editor are due to Dr. Edward LeRoy Bortz who is entirely responsible for planning this volume and supervising its publication. We are indebted to Dr. Frederick C. Smith for his careful preparation of the manuscripts and for seeing the book through the press.

The Editor deeply appreciates the whole-hearted and enthusiastic co-operation of the Editorial Board and the various contributors. We believe that this Year Book will amply fulfil its purpose and we hope that it will prove of value to the medical profession of this country.

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MEDICINE

Edited by GEORGE MORRIS PIERSOL, B.S., M.D.

and

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ALLERGY

By HARRY BOND WILMER, M.D., and MERLE MIDDOUR MILLER, B.S., M.D.

TREATMENT OF INTRACTABLE ASTHMA

Epinephrine—*Epinephrine in Gelatin*—In patients who have been taking repeated doses of the 1:1000 aqueous solution of epinephrine at frequent intervals, we have found the use of epinephrine in gelatin very desirable. We use the gelatin preparation almost always when indicated instead of the epinephrine in oil, the original "slow epinephrine." Both epinephrine in oil and in gelatin are absorbed much more slowly than the aqueous epinephrine which is often fleeting in effect although very beneficial for a short time.

W. C. Spain, M. B. Strauss and A. M. Fuchs¹ first prepared a solution of epinephrine in gelatin which delayed the rate of absorption and lengthened the period of influence on the patient.

Kohn and Bulger have reported that zinc slowed the absorption of epinephrine but almost immediately oxidized it, diminishing the effect of the epinephrine.

Gelatin is nontoxic, nonantigenic and reasonably stable. It is well suited as a

vehicle to delay the absorption of epinephrine because of its nonantigenicity. A bacterial growth factor was noted in some gelatins but is decidedly inferior in Eastman photographic gelatin. It was found by Koser, Chinn and Saunders² that the growth-promoting effect was highest with 5 per cent gelatin; 10 per cent, and 15 per cent concentrations were inhibitory. The gelatin used in the preparation of the gelatin epinephrine mixture is 16 per cent. The method of preparation as devised by Spain and his co-workers is as follows:

To a solution containing 1½ ounces (40 cc.) of glycerin and 4⅓ ounces (130 cc.) of distilled water, are added 27 grains (1.8 Gm.) sodium chloride, 15 grains (1.0 Gm.) chlorobutanol, 3 grains (0.2 Gm.) sodium bisulfite and 1½ ounces (40 Gm.) gelatin. The gelatin is added last and the preparation is mixed vigorously by rotation. This quantity of gelatin is conveniently made in a 1-quart (liter) pyrex Florence flask since the mixture tends to boil over if it is sterilized in too small a container. The

gelatin preparation is sterilized by autoclaving for 30 minutes at 20 pounds pressure. Aerobic and anaerobic cultures are made and kept at 98.6° F. (37° C.) for 4 days before the sterility of the mixture is decided upon or the gelatin mixture dispensed for use. This gelatin mixture remains stable for months if kept in the refrigerator. The 1:500 epinephrine solution used in this preparation is made by adding to 4 parts of the above sterile gelatin mixture, 1 part of 1:100 epinephrine solution. Aseptic precautions should be followed when the epinephrine is added and in the subsequent method for bottling. The gelatin mixture must be warmed in hot water to liquefy the gelatin so that it may be pipetted accurately. This 1:500 gelatin epinephrine solution is dispensed in sterile brown bottles.

This mixture is a gel at room temperature as well as at the lower temperature of the refrigerator (41° F.—5° C.) in which it should be stored. For administration it must be liquefied by warming. This is most easily accomplished by placing the vial in a container and covering it for a few minutes with a portion of the hot water in which the syringe has been boiled. The syringe is kept warm while the gel is liquefying by allowing it to stay in the remainder of the hot water. Since the preparation is given subcutaneously rather than intramuscularly, it may be self-administered, the usual allergy syringe and needle (tuberculin type syringe and 26 gauge ½ inch needle) being used. No untoward effects have been noted other than an area of moderate irritation at the site of the injection, occurring in the occasional patient and lasting no longer than 24 hours.

The dosage given was from 5 to 15 minims (0.3 to 1 cc.). The latter dose usually allowed the patient to sleep through the night.

M. M. Miller³ reported the use of epinephrine in gelatin in over 100 cases. Only 1 untoward reaction was noted and this consisted of pallor, marked perspiration, and tremor after a small amount of the gelatin was injected intravenously unavoidably.

It is always well to advise the patient to draw back on the plunger several times while administering the solution.

Spain did not report any unpleasant side effect other than usual pallor, etc., which is encountered with the use of aqueous adrenalin.

We feel that the gelatin epinephrine solution is the mixture of choice when prolonged effect is desired for the following reasons:

1. It is nontoxic and nonantigenic.
2. It is solution and not suspension.
3. It is easily self-administered by subcutaneous injection in contrast with the oil preparation of Keeney which must be given intramuscularly.
4. It is not necessary to have a dry sterilized syringe.
5. In using both the gelatin and oil preparations, a definite reduction is noted in the number of doses required daily by a patient.

Epinephrine in Oil — As has been stated above, we believe that the gelatin epinephrine preparation has certain advantages over the suspension of epinephrine in oil but a large number of physicians are obtaining splendid results with the oil epinephrine.

E. L. Keeney⁴ has reported the results of his observations in a preliminary report and later the above author with J. A. Pierce and L. N. Gay⁵ reported more clinical findings. Epinephrine in oil or "slow epinephrine" is a suspension of powdered epinephrine in peanut oil. It is best administered intramuscularly in the deltoid or gluteal muscle, especially if repeated injections are to be given. Occasional doses can be given subcutaneously in the buttocks.