

chapter has been added on the purification of water by the chlorine method, first published in THE LANCET of Nov. 28th, 1908, p. 1597, in an article in which it was shown that an infinitesimal amount of chlorine present in water sufficed to destroy bacillus typhosus and bacillus coli.—*Muter's Short Manual of Analytical Chemistry*, now edited by J. THOMAS, B.Sc. Lond. (London: Baillière, Tindall, and Cox. 1915. Pp. 237. Price 6s. net), has reached its tenth edition, which proves its utility in the hands of those, and particularly of pharmaceutical students, who require a laboratory guide to the qualitative and quantitative analyses of metals and their salts, as well as to the identification of alkaloids and the processes employed in the analysis of water, air, food, drugs, urine, and gases. The book is fully up to date, and the section on drugs has been brought into conformity with the B.P., 1914. The editor may be congratulated on the thoroughness with which he has carried out his useful task.—The requirements of students of medicine, dentistry, and pharmacy are carefully studied in *A Laboratory Manual of Qualitative Chemical Analysis*, by A. R. BLISS, jun., Ph.G., Ph.C., M.A., Phm.D. (London and Philadelphia: W. B. Saunders Company. Pp. 250. Price 8s. 6d. net). The tests given are very numerous, comprising all the well-known reliable ones for metals and for acids. The American spelling of some of the chemical compounds will be found troublesome by many English readers. A very clear general account of the chemistry of the carbon compounds appears in *Outlines of Organic Chemistry*, by F. J. MOORE, Ph.D. Second edition. (London: Chapman and Hall, Limited. New York: John Wiley and Sons. Pp. 325. Price 6s. 6d. net). The author has wisely elected to leave out complex questions of structure, and has preferred to give prominence to those organic substances of practical or technical importance, not omitting those familiar compounds which play a part in metabolism—e.g., glycogen and urea. The second edition is well up to date, as is evidenced in the account of the synthesis of rubber and the chemistry of new cyanogen compounds.

JOURNALS AND MAGAZINES.

Quarterly Journal of Experimental Physiology. Editors: E. A. SCHÄFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, and A. D. WALLER. Vol. IX., No. 1. London: Charles Griffin and Co., Limited. 1915. Pp. 1-99. Price 7s. 6d.—A Small String-Galvanometer Arranged as a Signal Apparatus, by A. Samojloff. By means of this instrument, which is fully described and illustrated, the latent period of a muscle can be accurately determined. This method has great advantages as compared with observing the commencement of the muscle curve.—On the Electrocardiogram, by W. A. JOLLY. Even with all the large additions which have been made in recent years to our knowledge of the electrical changes accompanying the heart beat, much remains doubtful, and the interpretation of the electrocardiogram is not yet complete. The two problems which await final solution are (1) the form of the electrical disturbance of active heart tissue; and (2) the course which excitation takes in passing over the heart. This paper deals with the form of the electrical change which passes over the cardiac muscle when it enters upon activity. The animals employed were the frog and tortoise—the heart either *in situ* with the pericardium open or isolated. Einthoven's string-galvanometer was used and the movement of the string was recorded photographically upon sensitised paper with a magnification of 660. It is assumed that warm-blooded and cold-blooded hearts yield essentially the same form of electrocardiogram. The author, after considering his own work in the light of previous researches, comes to the conclusion that since anabolism and katabolism must undoubtedly occur in active tissue, the suggestion that they have opposite electrical expression and underlie the component parts of the curve cannot be altogether ruled out of court. The paper is well illustrated.—Observations upon Vaso-motor Reflexes, by Swale Vincent and A. T. CAMERON. The authors describe the effects of different kinds of anæsthetics and other drugs upon the vaso-motor reflexes—e.g., ether (where dog, cat, and rabbit have been employed as subjects), chloroform, chloral hydrate, urethane, morphia, and curare. They note the differences between the effects of stimulating various nerves, motor and sensory, and supply theoretical explanations of their results. They give also the effects of the strength of stimulus and the effects on blood pressure. Amongst other

subjects permanent vaso-motor effects and their bearing upon "surgical shock" are discussed. We have only space available to record a few of their results. In an animal deeply under the influence of ether it is frequently impossible to obtain any vaso-motor reflexes whatever. At a certain stage of anæsthesia the effect of stimulating the central end of the cut sciatic nerve is a distinct rise; as the effect of the anæsthetic passes off the rise is followed by a more or less pronounced fall. Respiratory movements are now markedly increased, and the extent of the fall of blood pressure appears to be largely proportional to the violence of the respiratory activity. There seem to be two opposing influences, a reflex vaso-constriction producing a rise and violent respiration producing a fall. A similar fall of pressure is brought about by performing rapid artificial respiration by compression on the thorax, and can be induced in the human subject by rapid and deep voluntary respiration. The same results as those under ether generally obtain if chloroform, chloral hydrate, or urethane is employed. Under morphia similar stimulation may produce a rise of pressure, while mechanical stimulation of the skin produces a fall. Under curare stimulation in the great majority of cases causes a rise of blood pressure, an effect which seems largely to be due to cessation of the respiratory movements. The more widely the thorax is opened the more the fall of blood pressure obtained by stimulation of a nerve tends to become replaced by a fall. Weak stimulation usually causes a fall, while strong stimuli cause pressor effects. Cooling the nerve tends to produce vaso-dilator effects. In dogs stimulation of a recently regenerated sciatic nerve produces a fall, while stimulation of the normal sciatic produces a rise. Stimulation of the skin, kneading of muscle, and manipulation of the intestines all cause a fall of blood pressure under certain conditions and a rise under other conditions. The vaso-motor reflex from the intestine is abolished by full doses of nicotine, is reduced by section of the great splanchnic on both sides, and is abolished by extirpation of the semilunar ganglion. Some of these results are confirmatory of those of other observers. Whether a rise or a fall of blood pressure will result from stimulation of an afferent nerve (terminals or central cut end) depends on the relative effects of three primal factors: (a) reflex vaso-dilation; (b) reflex vaso-constriction; and (c) frequency and depth of respiration. The predominance of one or more of these factors is determined by (1) strength of stimulus; (2) number of fibres stimulated; (3) temperature of nerve; (4) nature of anæsthetic; (5) degree of anæsthesia; and (6) idiosyncrasy of the animal.—Studies in the Physiology of the Nervous System. On the Phenomenon of Facilitation. Its occurrence in reactions induced by stimulation of the "motor" cortex of the cerebrum in monkeys, by T. GRAHAM BROWN. This is the twenty-second contribution by the same author published in this journal, and is a continuation of his elaborate studies on the central nervous system. The subjects dealt with are the effect of applying a second stimulus after a first, the effect of repetition of stimuli in regular series, the effect of disturbing the regularity of series of stimuli in otherwise regular series, and the effect upon the phenomenon of facilitation of a previous freezing of the cortical point stimulated.

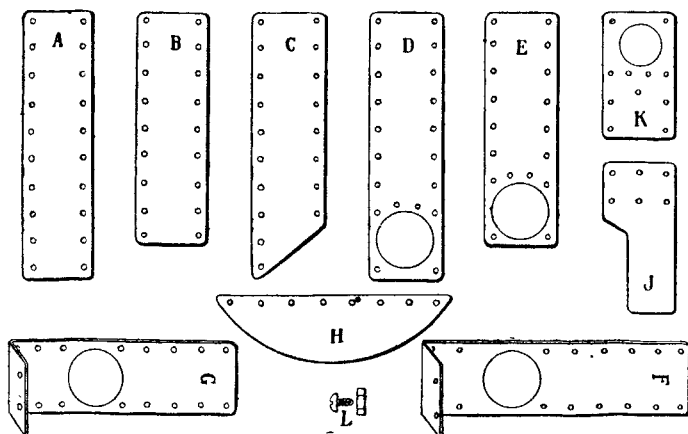
New Inventions.

A NEW UNIVERSAL PORTABLE SPLINT.

THIS portable splint is of an entirely new pattern and combines the following advantages:—1. Universal adaptability to any limb or part of a limb. Any splint can be formed, from the long Liston, Sharp's, Cline's, or Carr's, to the pistol, internal angular, or finger splint. 2. Extreme portability. The whole outfit, including case, weighs 1½ lb. and measures 9 × 2½ × 2 inches. 3. Simplicity of construction. The sections are fitted together with bolts and nuts into any required shape by the use of the fingers only, no tools being required. 4. It is aseptic, being made of plain metal. 5. It is quite rigid. 6. It is permeable to the X rays, permitting radiography without removal of the splint. 7. The various sections are replaceable separately if desired without buying an entire new outfit. Economy of space, time, and money are thus secured.

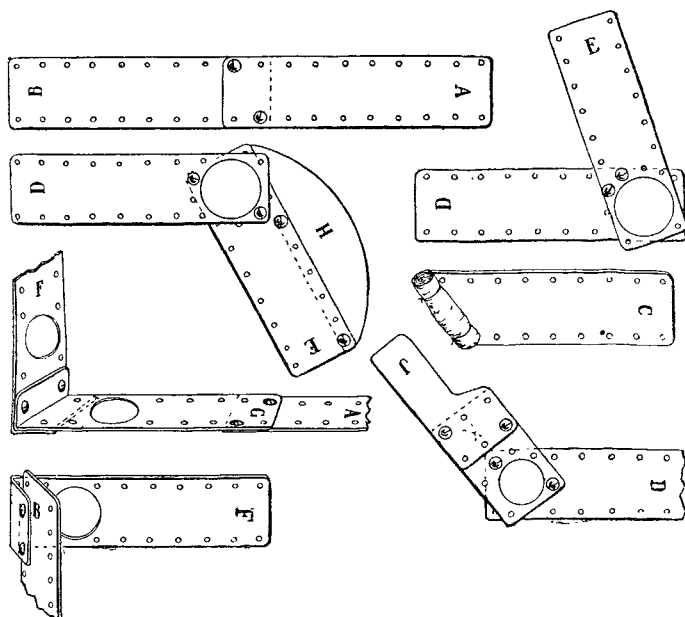
The splint consists of eleven pieces of flat metal (see Fig. 1) which can be bolted together by means of series of holes bored at corresponding intervals, so that any section may be bolted to any of its fellows to form any length and

FIG. 1.



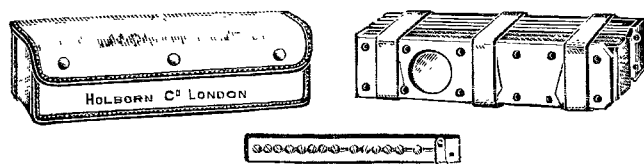
any angle. (Fig. 2.) Thus straight splints may be made from 8 in. to 4 ft. 8 in. in length, internal or external angular splints with fenestra for the condyle at any angle, obtuse, acute, or right; Carr's or pistol splints for wrist or

FIG. 2.



metacarpus, and finger or thumb splints. By means of two sections bent on the flat, anterior and posterior angular splints, or leg splints with sole, plate, or foot-piece, may be constructed with fenestra for the malleolus. The bolts and nuts are carried in a flat holder, from which they are unable to fall out. They occupy a minimum of space, and two sections can be firmly bolted together with the fingers only in 30 seconds or less.

FIG. 3.



The whole apparatus, in bright aseptic metal, with bolts, padding, and triangular bandage, kept together by the buckles and bands used in their application, is contained in a neat khaki case which can be carried in the pocket. (Fig. 3.)

The splint has been constructed to my design by the Holborn Surgical Instrument Co., Limited, 26, Thavies Inn, Holborn Circus, London, E.C.

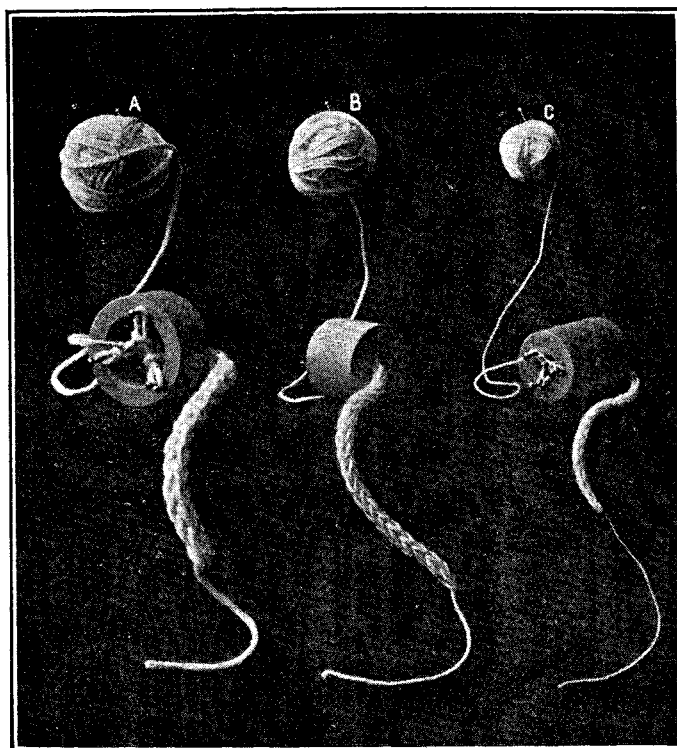
F. THOMPSON, M.R.C.S., L.R.C.P. Lond.

Sunbury-on-Thames.

A NOTE ON WICK DRAINS.

THE ordinary drain or "plugging" of folded gauze takes a certain period of time to make. When the gauze is at all hard or its fibre coarse, partially glazed or mercerised, as is notably the case with some of the American gauzes, the difficulty of folding is increased. Machine-made plugging is expensive and the sizes to hand are not always those required. It occurred to me that at this time, when large quantities of plugging are required for use with hypertonic or other treatment or for stopping a secondary hæmorrhage, it would be advisable to use some form of cheap lamp wick, but the woven varieties are rather closely knit and the twisted varieties are apt to be unmanageable with a probe. Some of the wicks sold do not absorb water.

A simple solution of the problem, apart from constructing a machine for the purpose or adapting a knitting machine, is to utilise a child's knitting reel with which reins or "cats' tails" are made. Three pins to the reel seem to be better than a larger number, but if a more truly circular and tubular wick is desired a larger number may be used. In this case the product is either closer in texture or unduly large.



The illustration shows three reels of convenient sizes, the drains being 1/2 inch, 3/8 inch, and 1/4 inch in diameter respectively. These sizes are made by employing reels of the following measurements (in inches):—

Diameter of wick	...	1/2	...	3/8	...	1/4
Size of reel—						
Height	...	1	...	1 1/4	...	1 3/4
Outside diameter	...	2	...	1 1/2	...	1 3/4
Diameter of hole	...	1 1/4	...	1 1/8	...	1 1/8
Side of triangle	...	1 1/2	...	1 1/8	...	1 1/8
Size of cotton	...	2	...	4	...	10

In the above table the only important measure is the distance between the feet of the (equilateral) triangle formed by the pins, because on this depends the size of the stitch in the tail. The other measurements merely indicate the sizes of reels convenient to work with. Any reel large enough to take the triangle and having a hole large enough not to compress the tail will do. Any kind of pin or tack will answer the purpose, but a convenient thing to use is a full-gauge, 5/8 inch, brass escutcheon pin, sold by most ironmongers.

The cotton used is Alexander's 4-thread knitting cotton (bleached), and the sizes to correspond with reels of the above-mentioned measurements are No. 2 (thick), No. 4 (medium), and No. 10 (thin), the approximate diameters of these threads being 1/8 inch, 1/16 inch, and 1/32 inch (the last one plus). This cotton is a smooth loose twist of four strands which