

to thirst, heart-burn, pain at night, and acid vomiting. The stomach must be washed out at night, and then the tube passed before breakfast the next morning. In these cases the stomach is found to contain 180 to 300 cc. of an acid fluid, which digests albumen, and gives the reactions for hydro-chloric acid. This is the only pathognomonic test for this condition. The amount of acid may also be increased to 0.3% and over.³⁹ Riegel⁴⁰ believes this condition to be quite common. It is of especial interest as pointing to a possible cause of ulcer, the extreme acidity of the juice rendering self-digestion easier. Some of the symptoms are like those of ulcer, and in ulcer there is usually an extreme acidity of the juice.⁴¹

The detection of other acids points to abnormal processes of fermentation going on in the stomach, as in catarrh or dilatation of the stomach. The significance of the digestive test has been mentioned in connection with the absence of hydro-chloric acid. The tests for absorption and muscular activity have been too little studied as yet. The muscular activity would naturally be diminished in dilatation, where the methods for determining the size of the stomach are also called for. When there is digestive disturbance, but the stomach digests a test breakfast in seven hours, and the juice is normal, the condition is often spoken of as "nervous dyspepsia."⁴² Many cases are undoubtedly due to some nervous disorder, while in others the absorbent power and the muscular activity of the stomach have not been carefully tested. Where there are other signs of a neurotic condition the term may be used, but at best it is vague, and in many cases we can define the numerous nervous affections of the stomach more exactly.

What do these new methods teach us in regard to treatment? Enough to cause us to alter our present methods. In the majority of cases there is a normal or excessive amount of hydro-chloric acid, hence the common exhibition of it is needless, and often injurious. Where the acid is in excess we should not depend on alkalis. The stomach should be washed out at night, Carlsbad water given in the morning, and the stomach given increased work by giving the patient an albuminous diet, avoiding carbohydrates. When acid is absent, or much diminished, the ordinary dose (Mv-x) is much too small. Ewald⁴³ has calculated that to render neutral juice properly acid, thirty to forty-five minims should be given after each meal, in three doses fifteen minutes apart, beginning about an hour after meals. When acidity of the stomach is due to lactic acid, from fermentation, this should not be combatted solely by alkalis, although Carlsbad may be used. The stomach should be washed out, and hydro-chloric acid given, for it will be remembered that when hydro-chloric acid is formed during digestion it checks the formation of lactic acid. In catarrh and dilatation washing out the stomach is a remedy to be first employed. In muscular insufficiency strychnine and very mild faradic currents may prove serviceable. In "nervous dyspepsia," as I have long believed, special treatment is uncalled for; we must build up the nervous system, and the stomach will take care of itself.

³⁹ Von den Velden. Volkman's klin. Vorträge, No. 280, 1886.

⁴⁰ Riegel. Zeitschr. f. klin. Med., xii, 426, 1887.

⁴¹ Korczyński und Jaworski. Deutsche Med. Wochenschr., No. 47 to 49, 1886.

⁴² Leube and Ewald. Verhandl. d. Congress. d. inner. med., iii, 204, 1884.

⁴³ Ewald. Berlin. klin. Wochenschr., No. 3, 4, 1886.

I have said nothing of that panacea for all disturbances of digestion, of which at least nineteen varieties are brought to our attention weekly, namely, pepsine. I have always acted on the statements which the physiologists have been making for years, that pepsine is required for digestion only in small amounts, and that hydro-chloric acid was the important factor. In the great majority of cases there is plenty of pepsine in the gastric juice, and the addition of any more is needless, and therefore wrong. In a few instances where partly digested food is to be given, pepsine becomes necessary in its preparation, otherwise the use of pepsine is thoroughly unscientific.

I have dwelt chiefly upon the methods of research, referring briefly and cursorily to these points where they throw light on the diagnosis and treatment. The thorough examination is not agreeable to the patient, although it is not dangerous, and it takes a certain amount of time and trouble. I can merely repeat that the more I try it the more firmly I am convinced of its value and necessity, and I fully agree with Ewald's dictum.⁴⁴ "I grow more convinced daily that an exact diagnosis of gastric diseases, and a sound treatment based on it can be obtained only by a careful chemical examination of the gastric juice or the gastric contents by the methods of qualitative and quantitative determination of acids as given above."

AN EXERCISE IN THE EXTEMPORIZATION OF LITTERS FROM RIFLES AND GUNSLINGS.

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FOR a number of years past, the subject of the conveyance of the disabled as an important part of early aid in accidents and emergencies, has been a popular one. The St. John's Ambulance Association in England, the Samaritan Societies in Germany, and still other bodies in other countries, all serving under the Red Cross, have contributed to this end. Foreign armies have long possessed thoroughly organized corps devoted to this work, and now the National Guard of many of our States is provided with an ambulance corps, while the regular army, with its hospital corps supplemented by four "company bearers" from each company, troop, and battery, has a foundation upon which is being erected a system of "first aid" that will be a material advance upon the work already done. In a recent lecture before the Military Service Institution, the writer presented some of the results of a considerable number of experiments as to the best methods of conveying the disabled by human bearers. The well-known method of carrying the disabled upon a litter extemporized from two rifles and their gunslings was particularly pleasing to many, and a strong desire has since been expressed for a system of movements by which such a litter could be constructed with the least confusion and delay.

In deference to this desire, the following exercise has been devised. Unless otherwise specified, the movements are to be executed in accordance with the authorized United States Infantry tactics:

The bearer company or squad being formed in two ranks, with their pieces at "carry arms," the medical officer commands, (1) *Rear open order*, (2) *MARCH*, which is performed in the usual manner. He then

⁴⁴ Ewald. Klinik der Verdauungskrankheiten, I, 107, 1886.

continues, (1) *Front rank, about*, (2) *FACE*. After this command is executed, he commands, (1) *Order*, (2) *ARMS*. The company is now prepared to construct the litters. Accordingly, the medical officer commands, (1) *Prepare*, (2) *LITTER*.

At *litter*, each man grasps the barrel of his rifle just below the muzzle, and lifts it directly forward until the stock rests upon a point midway between the front and rear rank. Each rear rank man lets its gunsling out to its greatest length; at the same time, the front rank man frees the upper end of his gunsling entirely from his piece. The rear rank man passes his gunsling over the rifle of the front rank man, and then, with his left hand, grasps the rifle of the front rank man, just below the muzzle; the front rank man then passes his gunsling about the rifle of the rear rank man, and, drawing it through the upper ring of his own rifle, hooks it at its greatest possible length, and then faces about to the front.

The medical officer then commands, (1) *Carry*, (2) *LITTER*.

At *litter*, the front rank man stoops and grasps the stocks of the rifles, and he arises to an erect posture holding them in his hands, with his arms extended by his side; at the same time that the front rank man arises with the stocks, the rear rank man lowers the muzzles until they are held by his side also.

It is now seen that an excellent litter has been formed with the rifles as the side poles, and the interlacing gunslings as the bed. A disabled man should be carried on this litter in a sitting posture, leaning back upon the chest of the rear bearer. To place a patient upon this litter, it should be lowered to the ground in obedience to the command, (1) *Lower*, (2) *LITTER*, and the patient made to sit upon it, facing in the direction of the stocks. It should then be lifted in obedience to the command, (1) *Lift*, (2) *LITTER*.

If it is desired to separate the litter again into its component parts, the medical officer commands, (1) *Order*, (2) *LITTER*.

At *litter*, the front rank man lowers the stocks of the rifles to the ground, and faces to the rear; the rear rank man, retaining his grasp at the same point upon the rifle-barrels, draws the stocks to a point midway between the two ranks, raising the muzzles to the height necessary to hold them easily in front of him.

The medical officer then commands, (1) *Break*, (2) *LITTER*.

At *litter*, the front rank man unhooks his gunsling and removes it from the rifle of the rear rank man, seizes his rifle and withdraws it from the gunsling of the rear rank man. Both bearers fasten their gunslings in the original position and bring their pieces to "order arms." The medical officer then commands, (1) *Carry*, (2) *ARMS*, following with (1) *Front rank, about*, (2) *FACE*, and bringing the company back to its original formation by the command, (1) *Close order*, (2) *MARCH*. The company is then dismissed in the usual way by the commands, (1) *Arms*, (2) *PORT*, and (1) *Break ranks*, (2) *MARCH*.

A litter extemporized in this manner has been shown by experience to be of the greatest value in the field, where the accessories of litter-bearing are very apt to be deficient or entirely absent. Its construction is equally adapted for any number of men from two to a hundred. A bearer company carrying this variety of extemporized litter may be manœuvred in exactly the same manner as an infantry company in

double rank formation. The evolutions are exceedingly effective, and, while not the less useful in actual service, are particularly adapted to exhibition occasions.

REPORT OF PROGRESS IN ORTHOPÆDIC SURGERY.¹

BY E. H. BRADFORD, M.D., AND R. W. LOVETT, M.D.

THE MECHANICAL PRODUCTION OF KNOCK-KNEE, FLAT-FOOT, ETC.

It is impossible, in the short space available here to do justice to Mr. Arbuthnot Lane's very admirable paper²⁸ on the pathology and physiology of the deformities of young life. One line of argument runs through it all, that the cause of all these deformities (knock-knee, flat-foot, lateral curvature, etc.), is mechanical, and brought about by the child's habitually assuming what he calls "attitudes of rest." Take knock-knee for example, in the erect position when the heels are together the femur and tibia form an angle open outward, and the external condyle transmits the body weight more than the inner one. A persistent assuming of this position, or even a more extreme one, with the feet apart, by even a healthy child, would be apt to lead to atrophy of the cartilage of the external condyle where the pressure comes, and hypertrophy of the inner one (in a former paper Mr. Lane has demonstrated these pressure results in healthy adults), and knock-knee results. If the assumption is correct, the wonder is, as the writer says, that so few children have knock-knee. The treatment of early cases should be to raise the inner side of the sole. Flat-foot often coexists with knock-knee, not that one is the result of the other, but that both are the results of this assumption of attitudes of rest. Partial adduction of the foot is the position of activity. Abduction, the position of rest assumed in the easy erect posture. Abduction habitually assumed, leads to rotation of the os calcis, and displacement of the astragalus and yielding of the ligaments come secondarily. Treatment should be directed to repairing the loss of tone and vigor, low-heeled boots should be worn, exercises should be adopted to strengthen the adductor muscles of the foot, and if necessary, some of the numerous mechanical devices should be resorted to. Round shoulders and lateral curvature in the same way are traced to static causes. One statement with regard to the latter might be questioned; "You can get no lateral flexion of the dorsal spine unassociated with what is called a rotation of the bodies of the vertebræ around a vertical axis."

With regard to rachitic deformities of the legs the ordinary cause is asserted to be a rotation of the sacrum, apparently in consequence of the flexed spine. The pelvis rotates secondarily, the ileo femoral ligaments are consequently strained upon and the child stands with thighs necessarily flexed. In this position the weight of the body falls inside of the knees and a tendency to bow-legs results. The treatment should be extension of the thighs and pelvis in the recumbent position.

LOOSE BODIES IN THE JOINTS.

König²⁴ writes opposing the theory that loose car-

¹ Continued from page 522.

²⁸ Guy's Hospital Reports. 1887. p. 241.

²⁴ Deutsch. z. f. Clin., Bd. xxvii, Heft. 1 and 2, p. 90.