

taken with impunity; and in prisons and public institutions, were it a necessity to use stale uncured, instead of other sorts of rice, its deleterious action might thus be counteracted by largely diluting it with other food. Such necessity need, however, rarely arise, since both fresh and cured are as easily obtained as stale rice.

"But employers generally could not be compelled, often could not, indeed, afford to provide the additional articles of food required to dilute toxic rice to this extent, and it is certain that coolies, badly paid as sinkhehs are, would not do so. The only practical way, therefore, to prevent beri-beri in a community, is for the State to prohibit the sale of any rice which is not either freshly made, or which has not been 'cured,' by boiling or heating in the husk before stripping it. There would be no difficulty in adopting the latter measure; it is already carried out on a large scale in several quarters.

"Simple as these remedies are, nothing more is wanted, as nothing less will suffice, to banish from the countries which it now infests the blight of beri-beri."

Any one interested in beri-beri should certainly study this monograph, which appears to discuss this disease from every possible point of view.

THE PROBABLE ORIGIN OF SYPHILIS IN EUROPE. By L. Bousfield, M.A., M.D.Cantab. London: Printed and published by S. F. Hodson, Rupert Street, W. Price 2s.

In the preface of this pamphlet the author expresses a hope that it will be considered a concise and compact history of the origin of syphilis in Europe, and no doubt most readers of it will give it this credit.

Dr. Bousfield has evidently gone well into his subject and carefully sifted the evidence he has been able to collect from the limited supply of literature at his disposal, and has produced a work which cannot fail to be of the greatest help to all those who are interested in the subject under review, and is well worthy of their perusal.

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## Current Literature.

**Ehrlich's Recent Work on the Chemical Therapy of Trypanosomiasis.**—In a lecture to the Berlin Medical Society, published in Nos. 9 to 12 of the *Berliner Klinisch Wochenschrift*, March, 1907, Ehrlich gives an account of his recent work on this subject. He considers that the days of empirical therapy are now over, and it is necessary to enquire into the "How and Why" of treatment. The problem which he sets before himself in this specific chemical therapy is to find a substance which will be taken up by definite parasites and kill them without too great injury to the host. He finds in trypanosomes convenient parasites for experiment. Ehrlich points out that the treatment of trypanosomiasis hitherto adopted produces only "half immunity." The animals appear well, but still carry the parasites in small numbers in their body. Ehrlich states that Greig and Gray, and later Koch, have shown that the same

view holds for sleeping sickness. He rightly says "that the patient is only really cured when there is not another parasite in the body, *i.e.*, completely sterilised." He then considers what he calls the therapeutic biology of the parasite, and firstly the production of strains of trypanosomes having the peculiarity of tolerance to drugs. By feeding mice on fuchsin the nagana trypanosomes disappeared from the blood. After weeks the parasites appeared in the blood, but could be removed by a second feeding; but however, there came a point at which the free intervals always got shorter, until finally the feeding was fruitless. Ehrlich states that this phenomenon can be explained in one of two ways: (1) Through long feeding with fuchsin the organism of the mouse had, either by synthesis, destruction or increased elimination, rendered the fuchsin inactive, or (2) the long treatment with fuchsin caused an alteration in the parasite, producing a strain resistant to fuchsin. The differentiation was simple. It was only necessary to inoculate a normal mouse with this resistant strain and then to treat with fuchsin. It was found, as suspected, that the strain of parasite had acquired the property of increased resistance to fuchsin. Röhl has shown that animals fed for a short time previously on fuchsin and then infected with the original nagana strain do not become infected. Ehrlich in a footnote suggests as a prophylactic to those who are travelling in areas where sleeping sickness and *Glossina palpalis* exist, feeding for a week previously on fuchsin combined with atoxyl. He thinks feeding preferable to subcutaneous inoculation, not only because less painful, but because the fuchsin is not so rapidly eliminated. Browning has obtained strains of trypanosomes resistant to: (1) atoxyl; (2) trypanred; (3) the combination of Mesnil and Nicolle, active trypanblue; and (4) atoxyl and trypanblue combined. From these experiments, therefore, the important fact emerges that strains of trypanosomes resistant to all the known destroying agents have been obtained, and as others are discovered it is possible that strains resistant to them will be produced. The limit of tolerance of these strains of trypanosomes is difficult to determine, as the host can only stand a certain amount of the drug, *e.g.*, atoxyl. Ehrlich has never been able, either by injection or feeding, to cure an animal infected with an atoxyl-resistant strain of trypanosome. When these strains resistant to drugs are injected into healthy normal animals, Röhl found that after thirty-six passages through normal mice the fuchsin strain of trypanosome had still retained its property of resistance to the drug. The atoxyl strain had its complete resistance to the drug (atoxyl) after nine and three-quarter months, 103 passages. Proceeding further with his chemico-therapeutic studies, Ehrlich determined that a strain of trypanosome resistant to atoxyl had not a trace of resistance to other drugs. Hence this acquired property of the trypanosome, *i.e.*, atoxyl tolerance, was absolutely specific. Cases of sleeping sickness have been treated for months and years without result. Ehrlich considers failure, in these cases, is due to the production of strains tolerant to the drug. He is of opinion that it is most important to determine, in these cases, by cultivation in animals, whether the strain of parasite is resistant to the arsenic or not. If a strain is found to be resistant it is essential to employ a combination of the known dyes acting on trypanosomes and atoxyl. He concludes, "that should it be confirmed that such atoxyl-tolerant strains

of trypanosomes can be produced in cases of sleeping sickness undergoing treatment with atoxyl, it becomes an urgent necessity to bring about the sterilisation in one act, since it is not to be lost sight of that the occurrence and formation of an atoxyl strain, which, as we have seen, can retain its resistance for months, may mean a great danger and considerable increase of difficulty in the therapy, since, perhaps, the intermediate host, the *Glossina*, may not be able to break the acquired peculiarity of atoxyl tolerance." Ehrlich continues the investigation of other bodies destructive to trypanosomes. He states that to determine which chemical is best suited to particular strains, he will at any time, as he has done with trypanred, place others at the disposal of investigators on this subject.

The above observations of Ehrlich indicate the difficulties in the way of obtaining an agent capable of destroying the trypanosome in the animal body without too great injury to the host. We trust that Ehrlich may before long accomplish the task of finding such a chemical body.

E. D. W. G.

**The Preparation of Catgut.**—We would direct the attention of all our readers who practise surgery to an article "on Iodine-Spirit Catgut," by Dr. J. Scott Riddell, in the *British Medical Journal* of April 6, 1907, p. 809, wherein he strongly recommended a method known as Salkindsohn's; he has the advantage of two years' experience to support his opinion. Briefly, the method consists in leaving the catgut in a solution of tincture of iodine (B.P.) 1 part, proof spirit 15 parts, for a minimum of eight days; it is then sterile, strong and pliable; it may be left in the solution indefinitely; there are a few further details, for which attention is directed to the original paper. We have been using iodine-water catgut for more than two years; it is satisfactory, but the iodine-spirit catgut is even better. Possibly the last word has not yet been spoken about catgut preparation, but this present method is quite satisfactory, is absolutely simple, and is within the reach of all.

M. P. H

**Physical Examination of Recruits in the Swiss Army.**—In the Official Report of the Federal Statistical Bureau for 1907, the attention of the Swiss schools has been drawn to the need of rational physical development of boys, in connection with the examinations instituted by the military department in its special instruction of May 20th, 1905, regarding physical examinations. This instruction lays down three exercises by which recruits are to be tested, namely, long jumping, lifting weights, and running. The selection of these exercises has been made because they can be applied everywhere and enable the examiner to test the endurance, strength, and physical alertness (*adresse*) of the recruits in the shortest possible time. All recruits, who are obliged to pass an educational test, are submitted to this physical test, with the exception of those who have some apparent constitutional defect or are exempted by a medical board. In testing the recruits a classification of "good," "moderate," and "poor," is made as follows:—

	<i>Long jump</i> (distance jumped).	
Good	= capable of jumping	3.5 m. (11 feet 1 inch or more).
Moderate	= " "	2.4 m. to 3.5 m. (8 feet 6 inches to 11 feet 1 inch).
Poor	= " "	up to 2.4 m. (8 feet 6 inches).

*Lifting weights* (*i.e.*, dumb-bells of 17 kilogrammes, in right and left hand together).

Good = capable of raising the weight 8 times.  
 Moderate = " " " 5 to 7 times.  
 Poor = " " " up to 4 times.

*Running* (time taken to run 80 m. = about 88 yards).

Good = capable of running the distance in 11.9 seconds.  
 Moderate = " " " " 12 to 13.9 seconds.  
 Poor = " " " " 14 seconds.

Of 27,416 men of the 1905 recruit contingent, 26,277 were examined according to these tests, and 1,139 exempted, or submitted to a modified examination. The results were as follows:—

Classification	Long jump	Lifting weights	Running
Good .. ..	3,545	14,879	2,295
Moderate .. ..	15,792	3,904	12,262
Poor .. ..	6,940	7,494	11,720
	<hr/> 26,277	<hr/> 26,277	<hr/> 26,277

These results are not considered brilliant; expressed in percentages they are as follows:—

Classification	Long jump	Lifting weights	Running
Good .. ..	14 per cent.	57 per cent.	9 per cent.
Moderate .. ..	60 " "	15 " "	47 " "
Poor.. ..	26 " "	28 " "	44 " "

The conclusion from these results is that the evidence of pure physical strength, as shown by weight lifting, is fairly satisfactory, but that alertness or fitness, as shown by the running tests, is not. In other words, the training has been at fault. This is considered all the more remarkable because of the fact that 18,026, or 68.6 per cent., of the men examined, had received regular gymnastic instruction, 11 per cent. belonged to a gymnastic society, 3 per cent. to a sports club, 16 per cent. had undergone preliminary military training, and 46 per cent. had undergone school gymnastics. Twenty-eight per cent. had done no physical exercise. Those who had undergone regular gymnastic training gave the best results, but the members of the sports clubs beat them in the running tests. While 39 per cent. of the gymnasts got "good" in long jumping, and 22 per cent. in running, only 4 per cent. of those without regular physical training got "good" in these tests.

The Swiss Federal Government is at present subsidising gymnastic instructors, and sending some to study the Swedish system of physical training. It may be interesting to note, in this connection, that an exhaustive statistical report on the increase of cardiac disorders in the Swiss Army has recently appeared.

W. G. M.

*Note.*— In Switzerland there are Government regulations on the subject of *Instruction Militaire Preparatoire*, *i.e.*, preliminary instruction of youths previous to their arriving at the years for military service. This instruction is in three categories: (1) Obligatory gymnastic instruction in the cantonal schools, *i.e.*, up to the age of 15 or 16. The Federal Government exercises strict supervision over these. (2) Voluntary physical training, after leaving school, *i.e.*, between 16 and 19 years of age. The Government encourages the formation of gymnastic and sports clubs for this purpose, organises courses for instructors, and prescribes the nature

of gymnastic training; but a youth's belonging or not to one of these clubs or going through courses of training is entirely voluntary; (3) voluntary cadet corps, for rifle shooting and military drill. The Government subsidises these corps.

It is the second of these, namely, the preparatory military training by means of gymnastic and sports clubs, that the physical examination tests of recruits specially refer to.

W. G. M.

**Treatment of Snake-bite by Injection of Permanganate of Potash or Calcium Chloride** (*Archiv. für Schiffs- und Tropen-Hygiene*, 1907, vol. xi., 6, p. 212).—An article by Brieger and Krause proves by experiment that permanganate of potash and calcium chloride in no way counteract the effect of snake-poison by injections. They are of use only for disinfection and washing out poison not yet absorbed. An anti-toxin serum is the only sure remedy for absorbed snake toxins.

W. G. M.

**Russian Losses in the Manchurian Campaign.**—An article by Dr. Schaeffer in the *Revue Mil. des Armées Etrangères*, vol. 69, 1907, p. 294, gives statistics published by the *Russki-Invalid* (No. 256 of 1906), certain results of Dr. Schaeffer's own studies, and various non-official information. Dr. Schaeffer's conclusions are:—

(1) The casualties are equal to but not greater than in 1870, in proportion to strength.

(2) The number of "killed" is not higher than in former wars.

(3) The number of subsequent deaths from wounds is much lower than previously.

(4) Recovery is usually so rapid that a very large number return to the ranks in a few weeks.

(5) The effects of artillery fire are higher than in 1870. Simple wounds by artillery fire are less serious than those of small calibre bullets.

(6) Generally surgical operations are not required in the dressing stations, and hæmorrhage almost always ceases of its own accord.

From lectures given in the Russian Staff College the following casualties for battles are obtained.

Battle	RUSSIAN			JAPANESE		
	Strength	Killed, Wounded, and Missing		Strength	Killed, Wounded, and Missing	
		Officers	Men		Officers	Men
Turentchen ..	10,000	73	2,324	28,000	..	1,200
Wa-fang-chow ..	45,000	131	3,577	45,000	47	913
Liaoyang ..	150,000	?	15,000	135,000	?	23,500
Shaho ..	200,000	?	35,000	170,000	?	19,500
Kei-Koutai (Sandepu)	90,000	?	22,800	65,000	?	8,700
Mukden—	320,000	2,185	89,305	235,000	?	69,000
Killed ..	..	(273)	(8,626)	..	..	..
Wounded ..	..	(1,576)	(49,426)	..	..	..
Missing ..	..	(336)	(31,253)	..	..	..

The conclusions of the reviewer are :—

(1) On the Russian side the total mean casualties for the infantry regiments vary between 10 to 40 per cent. (or about 20 per cent. as average) for all battles; for artillery and cavalry about 10 per cent. The proportion of killed to wounded (excluding missing) is from 1 to 4 up to 1 to 7.

(2) The proportion of wounded by rifle fire is about 83 per cent., as compared with 14 per cent. by artillery fire, and 3 per cent. by side-arms.

(3) Three-quarters of the wounded were able to walk.

(4) Forty-five per cent. could return to the ranks after three weeks.

(5) By adopting measures of hygiene suitable to the climate, and providing for feeding the men by means of wheeled kitchens, the number of Russian sick was less than in time of peace.

(6) By means of the first field dressing with each soldier immediate surgical operations have been vastly reduced.

(7) The practice of evacuating completely (*à outrance*), as practised by the Russians in the Manchurian battlefields, so far from increasing the number of deaths amongst the wounded, had, on the contrary, a happy influence on the results of wounds.

W. G. M.

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## Correspondence.

DR. M. S. PEMBREY AND DIAPHRAGMATIC DRILL.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I judge from Dr. Pembrey's attack on my paper that he is under the impression that diaphragmatic drill is a new system of breathing. As it is nothing of the kind, and thinking that some of our other readers may fall into the same error, I hasten to assure them that the exercises are only intended for those who need some assistance in correcting a vitiated type of respiration. The drill is neither more nor less than the movements which take place in *normal* breathing, and obviously those who breathe correctly have no use for it.

We are told that "breathing is strictly the intake of oxygen and the output of carbon dioxide." Is this so? As Keith poetically expresses it, "every organ in the body swings with the respiratory tide," that is, provided the diaphragm is brought into active use. Without a more or less full and free movement of this muscle, the apices of the lungs cannot be efficiently ventilated, nor can the adequate activity of the liver and other abdominal organs be maintained. The heart also looks to the respiratory movements for assistance in carrying out its functions. (Johannes Müller has shown that quiet nasal breathing, *i.e.*, diaphragmatic, furthers not only the return of venous blood to the right heart, but also the pulmonary circulation. Whereas, in quiet oral breathing,