

organisms are expected to exist, and should be the universal means of removing dust from all interiors.

School.	Number Present.	Cubic Feet of Air per Head.	Time of Day and Date.	Temperature Fahrenheit.	Purity of Air in Volume of CO <sub>2</sub> per 1,000 c.c.	Micro-organisms per Litre.	Micro-organisms per Square Foot per Minute and Moulds.	Remarks.
	Boys.			Deg				
1	30	151	12.0 P.M., 23-5-99	64	1.00	34	50-5	Class at rest.
2	28	405	12.0 P.M., 25-5-99	62	0.87	77	101-16	Boys coming into class-room that another class has just left.
3	38	289	11.15 A.M., 30-5-99	64	0.83	189	214-20	Class drilling.
4	50	218	12.0, 5-6-99	75	1.15	20	32-3	Class at rest.
5	36	140	2 P.M., 5-6-99	70	0.74	46	67-0	Class moving into class room (draught).
6	33	143	12.0, 6-6-99	67	0.80	48	71-10	Class at rest.
7	54	163	12.0, 6-6-99	66	1.25	134	224-22	Class drilling.
8	30	170	2 P.M., 6-6-99	66	0.60	256	320-36	Class moving into class-room.
9	32	210	12.30 P.M., 13-6-99	67	0.80	—	480-6 *	Class moving out of class-room (draught from school).
10	30	325	12.30 P.M., 16-6-99	68	0.90	—	91-3	Class moving out.
11	33	261	2.30 P.M., 16-6-99	68	0.69	—	59-4	Class at rest.
12	30	157	2.30 P.M., 19-6-99	70	0.64	—	56-4	Class at rest.
12A	30	159	2.30 P.M., 19-6-99	70	0.64	—	36-14	Class at rest. Almost fresh air. Plate exposed 2 ft. from open window.
13	14	337	2.30 P.M., 19-6-99	72	0.69	—	104-8	Half class removed during exposure of plate.
13A	14	337	2.30 P.M., 19-6-99	72	0.69	—	33-17	Half class removed during exposure of plate. Exposed as in 12A.
14	108	93	3.0 P.M., 21-6-99	70	0.87	—	212-17	Large class moved to small class-room.
14A	108	93	3.0 P.M., 21-6-99	70	0.87	—	73-4†	Large class moved to small class room. Exposed as in 12A.

\* Mostly liquefying.

**DOGS IN IRELAND.**—A recent order of the Board of Agriculture forbids, under a penalty of £20, the landing of a dog from Ireland, whether taken from Great Britain or not, unless the person to introduce the dog has obtained before embarkation a licence permitting the landing of the dog. Applications for the licence must be made in writing to the Secretary of the Board of Agriculture, 4, Whitehall, London, S.W. The licence will require the detention of the dog for a period of six months on some suitable premises approved of by the Board. This period may, under special circumstances, be reduced to ninety days.

**INTERNATIONAL CHARITIES CONGRESS.**—A Congrès International d'Assistance Publique et de Bienfaisance Privée will be held in Paris from Monday, July 30th, to Sunday, August 5th, 1900. It will be presided over by M. Casimir-Perier, ex-President of the French Republic. Dr. Theophile Roussel, the author of the law which safeguards infant life in France, and at present at the head of the Conseil Supérieur de l'Assistance Publique, is the Honorary President. There will be four sections: I, Infancy; II, the Sick, Aged and Infirm; III, Able-bodied Paupers; IV, Help by Labour. The main questions suggested for discussion are (1) out-relief, (2) treatment of orphans and of children withdrawn from the custody of their parents, (3) should help by labour be left to private philanthropy? (4) the care of poor consumptives. French will be the official language, but communications in foreign languages will be received if accompanied by translations. Further particulars can be obtained from the Secretary-General, rue Cambacérès 7, Paris.

## PRELIMINARY NOTE ON SOME EXPERIMENTS TO DETERMINE THE COMPARATIVE EFFICACY OF THE DIFFERENT CONSTITUENTS OF HAFKINE'S PLAGUE PROPHYLATIC.

By C. BALFOUR STEWART, M.A., M.B.CAMB.

[From the Plague Research Laboratory, Bombay.]

The following short note gives the results of experiments done at the Plague Research Laboratory, Bombay, between February and May, 1899. The full account has been sent in to Government, and will appear in due course.

A number of rabbits were inoculated with increasing doses of a young culture of living plague in broth, and the somewhat unexpected result was found, that the rabbits which received the larger doses showed a smaller mortality. I thought it possible that during the growth in broth the latter had acquired sufficient prophylactic properties to render the animal immune to the microbes contained in the broth culture injected.

To see whether the prophylactic property lay in the broth altered during the growth of the microbe or in the sediment, several sets of experiments were done in which the broth was filtered through a porcelain filter. The sediment of a certain quantity of living plague culture was found to be more virulent than the same quantity of broth culture unfiltered when injected into rabbits.

Some rabbits were inoculated with the filtrate alone, others with the sterilised sediment alone, and immediately afterwards injected with a suspension of living plague from an agar tube. The result seemed to show that both the filtrate and the sterilised sediment possessed prophylactic properties.

Immunity seems to be conferred even when the animal is inoculated with the prophylactic immediately before the injection of plague.

In testing the virulence of a plague culture, it is evidently important to use only a very young broth culture or an agar culture.

## REVIEWS.

**WAR CORRESPONDENCE (HISPANO-AMERICAN WAR).** Letters from Dr. NICHOLAS SENN, Chief Surgeon U.S. Volunteers Chief of Operating Staff with the Army in the Field. Reprinted from the *Journal of the American Medical Association*. Chicago: American Medical Association Press. 1899. (Crown 8vo, pp. 282.)

THIS book is an instalment of that full history of the Spanish-American war which has yet to be written; it is from the pen of an eminent surgeon fully cognisant of all that went on; the accuracy of his facts and the soundness of his deductions may therefore be entirely relied on.

Dr. SENN gives instructive, curious, and even amusing glimpses of the extraordinary military condition, both of officers and men, of the American army of volunteers, hastily mustered at the commencement of the war. Had such an undisciplined mob encountered a regular army, of even moderate fighting power, there could only have been one result—disaster.

The first sixty pages describe the enlistment and embodiment into battalions of the Illinois Volunteers (the writer's own State); the letters are "very American," for the elaboration of minute details is freely garnished with ethical and historical reflections and personal sketches, both male and female.

The very first matter which fell to Dr. Senn, as the medical head of the Volunteers, was to get together a staff of medical officers, of which, according to the State laws, five are attached to a battalion. It was done by advertisement and the issue of schedules, which the candidates had to fill up as to personal and professional qualifications. Those deemed eligible underwent a thorough physical inspection, and if found fit, a professional examination of a practical kind.

By this means a body of fairly good officers was collected, who physically "compared favourably with the line and field officers." Of course, they had no military experience, and had to be hastily instructed in the elements of military duty and hygiene; but their first work was to vaccinate every recruit right away, for the "conscientious objector" is summarily dealt with in democratic America.

One of the most curious features was the remarkable division of labour in the necessarily rapid medical inspection of recruits. First, they were examined in mass, and a rough elimination of all obviously and visibly unfit made; those selected were then inspected; one medical officer examined the chest, a second eyes and ears, a third mouth and neck, a fourth the extremities and abdomen, and yet a fifth made a broad survey as to "general aptitude for active service." No standards are mentioned.

By this system it is stated between 800 and 950 were examined in a day, until a total of 9,899 was reached; the rejections were about 10 per cent. What do our examiners of recruits, of whom only an expert can get through a dozen in an hour, say to this wholesale despatch? The inspection, even at best, must have been very superficial. Supposing the examiners had physical endurance to stick to such fatiguing work continuously for five hours, then the recruits must have been passed at the rate of three a minute! We suspect many bad bargains must have slipped through, who at the end of the war probably further swelled the gigantic American pension list, by diseases supposed to have been "contracted in and by service"!

It is mentioned that 25 per cent. of those examined presented some degree of varicocele; a proportion, we believe, much in excess of that found in British recruits.

The volunteers were massed in various "crowded camps," and with "imperfect equipment" and bad weather much sickness soon ensued. The most serious diseases were cerebrospinal meningitis, typhoid fever, and septic pneumonia. Of course, with such masses of raw soldierly material, there was much confusion and lack of discipline in these camps, but comparatively little drunkenness.

Of the military officers, Dr. Senn gives some amusing accounts. Those of the United States regular army were everywhere highly spoken of, and all they should be; but those of the volunteers, pitchforked from civil life into military position by political interest, often made themselves the butts of ridicule. Fun is poked at the "lucky" ones, suddenly advanced from rank to rank; but a clean leap from "second lieutenant to lieutenant-colonel," is held to be beyond a joke. In another place, commenting on the want of sufficiently high rank in the medical department, Dr. Senn says: "Major-generals (in these camps) were in abundance; brigadier-generals by the dozen; colonels turned out by the hundreds." Many of the latter, in the gayest of "bran new uniforms, could not handle a musket to save their lives," much less command men. Some were seen "even attempting the unusual feat of mounting their horse from the right side!" Such a condition of things is at most incredible, and the wonder is, not that there was confusion and constant breakdowns, but that anything was accomplished at all. Truly the patriotism, versatility, and practical ability of the American people must be unbounded to make headway against such a system.

From the camp at Chickamauga Dr. Senn went as chief of the operating staff to Santiago de Cuba, in the hospital ship *Relief*. He calls this "vessel" a great institution, for she was fitted with every imaginable contrivance for the reception of sick and wounded; and yet there were complaints of a medical breakdown by newspaper correspondents, whose charges he resents and traverses with justifiable warmth. There was neither want of capacity in the medical chiefs, nor lack of hospital supplies, nor dependence on the Red Cross Societies; but the default lay with the transport branch in not overcoming the difficulty of establishing communication between the ships in the offing and the troops on shore. In short, it was a repetition of the old Balaclava breakdown, with the same result, that the blame was put on the wrong shoulders.

Dr. Senn's letter on the "qualifications and duties of the military surgeon" shows that he found that ideal, good, all round medical officers were not as plentiful as blackberries. He considers that the essential qualities in this officer are:

liberal general and professional education; good physique; courage; ready resource; mechanical handiness; he should be a man of the world in general social fulness and wide culture, and above all he must be imbued with the true "military spirit," or he has no business in the army. All this is absolutely correct, but where are such paragons to be found?

The invasion of Cuba, he says, was "characterised by hasty action, a lack of organisation, and inadequate preparation." Yellow fever made its appearance in less than two weeks from the time the troops landed, and in two weeks more 500 comparatively mild cases had occurred; this, coupled with sickness from the "ever present malaria" soon reduced the fighting power of the invaders; Santiago just surrendered in time to prevent a catastrophe. In the subsequent invasion of Porto Rico many of the mistakes in Cuba were naturally provided against; but typhoid fever soon became alarmingly prevalent, and there was little doubt that the specific cause of it came direct from the American camps, and was not picked up on the island; for, as it is remarked, that while the sufferings of the troops at the theatre of operations were great, the volunteers left behind in the American camps had also their own share of "deaths, sickness, and hardships."

The adverse climatic influences in Cuba was greatly aggravated by inadequate and improper food; it was really such causes and not the enemy which struck down the American forces. The casualties of the war from the enemy are estimated at no more than 280 killed or died immediately of wounds, and 1,425 wounded.

There is much of interest in the surgery of the war, and Dr. Senn quotes many cases. The small Mauser bullets used by the Spaniards caused clean flesh wounds, which soon healed because they carried no clothing or other infective matter with them. Bone was sometimes penetrated without being fractured or broken up. Meddlesome probing is condemned; the old-fashioned probe was almost entirely superseded by dissection and the use of the *x* rays.

Finally, Dr. Senn pays a warm tribute to "Esculapius in the battlefield," in which he shows that the military surgeon does his unselfish work in circumstances demanding the utmost courage and devotion. The nurses, both male and female, in camp and in the field, are also the subjects of his praise and admiration.

The book is profusely illustrated by photographs, sketches, diagrams, and tables.

## NOTES ON BOOKS.

THE value of Dr. CHARLES W. PURDY'S *Practical Urinalysis and Urinary Diagnosis* (Fourth revised edition. Philadelphia: F. A. Davis; and London: Sampson Low, Marston, and Co. 1898. Demy 8vo, pp. 375, 7 coloured plates, and 44 figures. 14s.) is certainly attested by its having arrived at a fourth edition in less than four years. In a review of the first edition in these pages attention was drawn to the general character of the work. Some extensive alterations both by way of addition and elimination have been made, especially in the part dealing with the chemistry of the urine. Some interesting observations will be found on centrifugal analysis. The author has himself introduced an electric centrifuge with a speed regulator, and he describes and figures an apparatus for sedimenting micro-organisms. In centrifugal analysis he finds that normally chlorides stand at 10 to 12 per cent., phosphates at 8 per cent., and sulphates at 0.8 per cent. bulk measure. The section on the toxic action of the urine has received much attention. The subject is discussed both in respect to normal urine and to the urine in infective processes, such as tetanus, pneumonia, cholera. In the second part of the work not only are the alterations in the urine described, but also the prominent clinical features of the disease, as well as the differential diagnosis. It includes the diseases of the kidney and its pelvis and also bladder affections, as well as a description of the urine in other diseases, and especially in infective fevers. A useful list of apparatus is given in an appendix. The work maintains a high standard of efficiency, and should prove of much service both to student and practitioner.