no less extensive. Changes in law, however, are often tardy in development, and it therefore behoves the managers of libraries in the meantime to impress upon their readers by notice and regulation what is their evident duty in this matter.

QUEEN'S HOSPITAL, BIRMINGHAM

THE resignation of Sir James Sawyer as senior physician to the Queen's Hospital will cause some vacancies. It is rumoured that Dr. Foxwell will be a candidate for this appointment, and that Dr. Wilson will apply for the post of assistant physician to the General Hospital in the event of Dr. Foxwell going to the Queen's. Possibly Dr. Crooke may apply for the appointment of casualty physician to the Queen's Hospital, and will be ready for any pathological vacancy which may occur at the College.

A POLICEMAN in St. Louis having been shot in the abdomen while making an arrest, Dr. Bernays, the surgeon who attended him, at once performed laparotomy, and sutured the stomach and jejunum, which were injured. The man recovered, and the municipality of St. Louis has granted a sum of \$500 to Dr. Bernays for his skilful management of the case. Such a graceful act deserves to be recorded, and commended as a precedent.

THE *Times and Register* (New York and Philadelphia, May 11th) states that among the names mentioned for the vacancy created by the death of Professor S. W. Gross are those of Charles Parks of Chicago, C. Wyman of Detroit, Hunter Maguire of Richmond, and Nicholas Senn of Milwaukee.

THE Cavendish Lecture will be delivered by Dr. Andrew at the West London Hospital on Friday, June 7th, at 5.30 P.M. The subject will be "The Relations between Disease and the Regulating Nerve Centres."

MR. PROVAND has given notice to call attention to the financial position of the London and other hospitals, and to move a resolution on the subject.

SIR MORELL MACKENZIE has been elected an Honorary Member of the Medical Society of the State of New York.

DR. GRAILY HEWITT has been elected a Fellow of the Royal Society of Edinburgh.

VACCINATION IN JAPAN.

By HAMILTON CARTWRIGHT, M.R.C.S. &c.,
EMERITUS PROFESSOR AND HON. FELLOW OF KING'S COLLEGE, LONDON.

IN the face of so many conflicting testimonies and opinions as to the value of vaccination, from Dr. Creighton's contribution to the "Encyclopædia Britannica" to the recent article in the *Westminster Review* for February, it may be instructive to those who are interested in the subject to recount the information which I gained in Japan during a voyage round the world, whence I have just returned. There could be no better test country as to the value of vaccination than Japan, and having visited it twice within the last twenty years I am enabled to give some personal testimony as to what the effect of vaccination has been there. Two decades since, nearly every second person was pock-marked; whilst now, as a rule, this is only the case with the old, the younger children in those districts where vaccination is skilfully performed being unmarked. Whilst at Tokio, I visited the native hospitals, under the ægis of Mr. Yamada, the secretary of Dr. Nagayo Sensai, the President of the Sanitary Board of the Home Office, to whom I am much

indebted for information on this and other medical matters. My first visit was to the municipal bovine farm under the care of Dr. Kijuchi, and maintained at the expense of the State. After seeing a calf skilfully vaccinated by the doctor, he operated upon several patients, and I was surprised to see that he vaccinated all who came to him, though some had well-marked cicatrices on both arms of very recent date. He told me that he never refused to revaccinate, however successful a prior operation had been, as the patients' return proved their faith in the operation. In relation to this, he said that he considered it had been amply demonstrated in Japan that vaccination, however perfectly performed, only rendered a person far less liable to small-pox or modified the attack, whilst he thought that it lost much of its protective power after a lapse of five years, though he said that he did not know of a case of death from small-pox in cases in which the operation had been performed within five years and was effective in both arms. In this institution the operation is most carefully carried out, five punctures being made in each arm. In Tokio the people have such belief in the operation that they frequently ask to be revaccinated within the year. In that town, as in Osaca, Kyoto, and Hiogo, great pains are taken to secure the efficacy of the operation; but in other places there are so few qualified practitioners that it is often imperfectly performed. Thanks to Dr. Nagayo Sensai I have been provided with full statistics with regard to small-pox since the legal and compulsory institution of vaccination in the seventh year of Meiji (1874), when the Government instituted a vaccine farm at Tokio for the distribution of calf lymph to the different local authorities throughout the country in spring and autumn, and whenever small-pox is prevalent.

The lymph is preserved in capillary tubes, five boxes of which constitute a "gu," or set. The distribution was formerly 3 "gu," or 15 sets per 100,000, now increased to 6 "gu." In April, 1887, instruction was first given by agents of the Home Department in its use, and the regulations for vaccination, and the penalties for non-compliance with them, enacted in 1874 and 1885, were confirmed. The new regulations oblige not only those unsuccessfully but also those successfully vaccinated to be revaccinated within a period between five and seven years after the first operation, whilst in the event of an epidemic of the disease all are recommended to be revaccinated, however recent their last vaccination. The breach of these regulations is punished by fine, or even imprisonment. (See annexed forms of vaccination certificates.) Between

VACCINATION CERTIFICATES.

Form No. 1.

[Seal.] Certificate of Vaccination.

Name

Sex

Residence

Age

Was vaccinated by me with perfect (or imperfect) result,
..... (Name of Vaccinator).

Form No. 2.

Table showing the number and the results of the vaccinations made during the half-year beginning ending year of Meiji by (Name of Vaccinator and residence).

.... year of Meiji.	FIRST VACCINATIONS.		SECOND VACCINATIONS.	
	With perfect results.	With imperfect results.	Perfect results.	Imperfect results.
.... Month ..				
.... " ..				
.... " ..				
.... " ..				
.... " ..				
Total ..				

July, 1878, and June, 1879, 2496 persons were attacked by the disease, and 685 died, from which figures we have a

TABLE I.
SHOWING CASES OF SMALL-POX BY AGES AND SEXES, ETC., IN EACH FU AND KEN, JULY, 1878—JUNE, 1879.
(Names of Fu and Kens from which no case has been reported are not mentioned in this Table.)

Name of Fu or Ken.	Vaccinated or not.	0-1.		1-3.		3-7.		7-10.		10-15.		15-30.		30-.		Total.		Ages and sexes not reported.	Grand total.	Recoveries.	Deaths.	Percentage of deaths.
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.					
Tokio	{ Vaccinated Not vaccinated	..	..	1	1	..	1	..	..	..	..	..	..	..	..	1	2	..	3	..	..	..
Kioto	{ Vaccinated Not vaccinated	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..
Niigata	{ Vaccinated Not vaccinated	..	..	..	..	..	..	..	..	1	1	2	1	..	..	2	1	..	7	3	1	14.29
Saitama	{ Vaccinated Not vaccinated	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..
Ibaraki	{ Vaccinated Not vaccinated	..	2	1	3	2	4	1	..	1	2	5	3	1	..	11	7	..	62	18	..	..
Miye	{ Vaccinated Not vaccinated	..	..	..	..	..	..	..	..	..	..	1	6	..	..	26	18	..	..	44	..	..
Aichi	{ Vaccinated Not vaccinated	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..
Shizuoka	{ Vaccinated Not vaccinated	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..
Yamanashi	{ Vaccinated Not vaccinated	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Shiga	{ Vaccinated Not vaccinated	..	..	..	1	..	..	2	1	..	3	..	1	..	..	..	3	..	..	..	..	25.00
Okayama	{ Vaccinated Not vaccinated	2	..	..	..	..	..	..	1	1	..	3	..	1	..	7	1	..	8	5	3	37.50
Yehime	{ Vaccinated Not vaccinated	13	21	2	38	14	22	18	10	27	9	65	41	1	8	140	109	..	487	132	97	52.36
Kochi	{ Vaccinated Not vaccinated	3	5	8	6	16	17	11	9	19	18	63	32	8	3	128	82	..	360	190	20	19.44
Total	{ Vaccinated Not vaccinated	16	29	11	51	32	43	30	21	47	42	136	76	10	11	282	199	..	941	364	117	35.18
Nagasaki	{ Whether vac- cinated or not, unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	404	404	329	75	18.56
Nagano	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	25	23	2	8.00
Hiroshima	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	407	407	256	151	37.10
Wakayama	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	9	8	1	11.11
Oita	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	23	17	6	26.09
Kumamoto	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	687	687	568	119	17.32
Total	Ditto	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1555	1555	1201	354	22.76
Grand total	{	45	87	62	70	75	63	57	39	80	59	202	108	20	17	541	398	1557	2496	1811	685	27.44
Comparison as to sex.	{	8	..	..	8	7	..	18	..	21	..	94	..	3	..	143	..	..	..	..	..	..
Percentage of age-period	{	3.29	..	5.29	..	5.73	..	3.85	..	5.57	..	12.42	..	1.43	..	..	..	62.37	..	..	..	..

ratio of 27·44 deaths per cent. of all cases. According to the instructions of the eleventh year of Meiji (June, 1878), the authorities were instructed to make inquiries in every case whether the patient had been vaccinated, and, if so, how often, and whether the operations had proved susceptibility or insusceptibility. During this period two “fus,” or “kens,”¹ reported small-pox cases as instructed, the number being 941 in all, of which 458 were vaccinated, 481 unvaccinated, as Table I. shows. The patients who had never been vaccinated were most numerous between the ages of one and three; and the deaths of patients who had been vaccinated were 24·32 per cent. of those attacked, and of those unvaccinated 59·17 per cent., giving a higher rate by twofold to the latter. In relation to this statement, it must be recollected how often vaccination is imperfectly performed in Japan by unqualified persons, though statistics prove that effective vaccination does not only in a majority of cases prevent the attack, but lessens the malignant nature of the disease when its absolute virtue has faded away with the lapse of time. The latest report to which I have had

which we have little opportunity of proving in England, save during an epidemic, whereas in Japan there is an opportunity of doing so at any time. Another point proved is that the duration of the protective power of vaccine is not nearly so long as usually believed, and that in a country where small-pox is rife revaccination is necessary at a period varying from five to seven years. Again, in spite of the great success of vaccination in Japan, it must be remembered that the cause of partial unsuccess is to be sought in the fact that the operation is performed empirically in the greater part of that country by unqualified practitioners, who have never had the opportunity of seeing the operation performed. A proof of its success is to be seen by comparing the old and young in the large towns in which vaccination is obligatory and carefully performed. In the one case pock-marks are the rule, in the other the exception; and so great is the belief of the people in its protective power that they cannot have their children vaccinated too often. Whilst, lastly, Dr. Kijuchi told me that in days gone by it might be said that every person had small-pox once, a

TABLE II.
SHOWING THE NUMBER OF VACCINATIONS IN JAPAN FROM 1875 TO 1886.

Year.	PRIMARY.			SECONDARY AND REVACCINATION.			Grand totals.	Population of empire.	Vaccination per 100 of population.
	Successful.	Failed.	Totals.	Successful.	Failed.	Totals.			
1875*	171,061	8,888	179,949	..	..	115,991	295,940	33,997,415	..
1876	768,452	27,725	832,873	200,882	426,690	629,951	1,462,824	34,338,367	4·26
1877	726,953	41,639	768,592	194,216	391,867	586,083	1,354,675	..	..
1878	874,654	40,998	915,652	199,016	479,737	678,753	1,594,405	..	..
1879	772,160	23,852	796,012	124,898	332,131	457,029	1,253,041	35,768,547	3·50
1880	942,907	33,768	976,675	170,870	480,753	651,623	1,628,298	35,929,023	4·53
1881	945,055	52,681	997,736	183,260	280,174	463,434	1,461,170	36,358,955	4·02
1882	1,007,815	49,158	1,056,973	183,554	259,483	443,037	1,500,010	36,700,079	4·09
1883	1,238,111	57,874	1,295,985	238,223	358,079	596,302	1,892,287	37,017,262	5·11
1884	1,180,803	54,067	1,234,870	298,128	338,590	636,718	1,871,588	37,451,727	5·00
1885	1,595,556	142,396	1,737,952	1,014,346	1,453,438	2,587,485	4,325,437	37,868,949	11·42
1886	1,304,330	165,638	1,470,018	1,949,749	2,422,630	4,372,429	5,842,447	38,151,217	15·31

* Latter half.

access was that which came out for 1881, these reports appearing at intervals of four or five years. From July 1st, 1876, to June 30th, 1877, the total number of vaccinations amounted to 1,659,298, out of which 1,060,585 were successful, and 598,713, or 36·08 per cent., unsuccessful. Of these, 813,199 were vaccinations performed a second and a third time. Among those vaccinated for the first time, 785,757, or 96·63 per cent., proved to be successful. The ratio of the total number of vaccinated to the whole population (30,565,570), excepting the “fu” of Tokio and the “kens” of Miyo, Kumamoto, and Kagoshima, was found to be 5·43 per cent. During the period mentioned nineteen cows were vaccinated at the *Parc Vaccinogene* at Tokio, and 17,970 tubes were distributed to the authorities of “fus” and “kens” and to public hospitals and colleges. In relation to this report, the facts of which are entirely derived from information most kindly afforded me by the Home Office of Tokio, through Dr. Nagayo Sensai, I would suggest that they are especially valuable as giving proofs of the efficacy of vaccination for these reasons:—Firstly, in England, our opportunities of testing the true value of vaccination are comparatively rare, whereas in Japan small-pox is never absent, an epidemic form prevailing every spring and autumn. Secondly, the Japanese are taking every means of verifying its success or non-success in statistics most carefully compiled, with European aid. The sixteen years of its adoption in Japan seem to prove these points: that bovine lymph is more effective than human lymph; that operations performed with lymph taken from secondary vaccinations is comparatively ineffective. Dr. Kijuchi has a strong opinion that vaccination is not an absolute protection against small-pox, only modifying its course so materially as to render fatal results almost impossible; and this is a point

severe epidemic occurring, on an average, every seven years. In one epidemic, which occurred in the year of Kwangsei, there were 579 deaths out of 1345 cases; whilst at present he said that cases occurring *after efficient vaccination* were very mild, and *over within thirteen days, whilst he knew of no death in such cases.* This is strong testimony, but probably not over-stated by so careful an observer. Table II. is from a manuscript given to me by Mr. Yamada in preparation for the next forthcoming report.

THE PARIS UNIVERSAL EXHIBITION.
(FROM OUR SPECIAL CORRESPONDENT.)

The Eiffel Tower.

AFTER a fortnight's delay the Eiffel Tower has been opened to the public. This is certainly the most important item of Exhibition news. It is true that the public as yet is only allowed to go up to the second platform, where the *Figaro* has established the printing-office of its Eiffel Tower number. Still, to write, print, and publish a newspaper in an office thirty-six storeys high is certainly a new departure in journalism, which, if prolonged for a certain time, might produce physical results upon the staff worth noting. Will such unnatural exercise as that of ascending several times in the course of the day thirty-six flights of stairs numbering 730 steps conduce to the health of the staff and the compositors? But then the lift is soon to be in working order, and it will no longer be necessary to climb. The air is much purer at this altitude, and most persons who have gone up the tower declare they feel as if they had been at the seaside. If this impression gains ground, perhaps the construction of

¹ A “fu” means a capital; a “ken” a department.