only to calculate according to Table No. I the average of the successes obtained in vaccination during the two periods and in each category of remote anamnesis. Thus we have:

	Good Successes per 1,000 Vaccinations.		
	Among the Variolated.	Among the Vaccinated.	Among the Never Variolated nor Vaccinated.
Period 1877-81...	379	408	505
1882-97...	525	598	730
1877-97..	491	553	678

If we now apply these proportions to the already established number of variolated, vaccinated, and never vaccinated, we shall have the definitive repartition of the average strength into categories of recent and remote anamnesis, and with their respective combinations, as it results from the following table:

TABLE V.

Categories of Recent Anamnesis.		Remote Anamnesis in Childhood or before entering the Service.				Total average Strength.
		Variolated.	Vaccinated.	Total Variolated and Vaccinated.	Never Variolated nor Vaccinated.	
Period 1877-81.	Not yet vaccinated in the corps	106	2,454	2,560	98	2,658
	Vaccinated in the corps	7,583	176,455	184,038	7,139	191,177
	Without success	4,709	104,461	109,170	3,534	112,704
	With success	2,874	71,994	74,868	3,605	78,473
	Total	7,689	178,909	186,598	7,237	193,835
Period 1882-97.	Not yet vaccinated in the corps	60	2,722	2,782	56	2,838
	Vaccinated in the corps	4,290	195,931	200,221	4,087	204,308
	Without success	2,038	78,764	80,802	1,103	81,905
	With success	2,252	117,167	119,419	2,984	122,403
	Total	4,350	198,653	203,003	4,143	207,146
Period 1877-97.	Not yet vaccinated in the corps	70	2,657	2,727	67	2,794
	Vaccinated in the corps	4,961	191,461	196,422	4,761	201,183
	Without success	2,525	85,583	88,108	1,533	89,641
	With success	2,436	105,878	108,314	3,228	111,542
	Total	5,031	194,118	199,149	4,828	203,977

So that, to know the different receptivity of small-pox according to the different categories of anamnesis, we have only to seek the relation between the figures of the respective average strength, and those of the cases of small-pox given by Table No. III. Let us consider first only the period 1882-97, in which the cases of small-pox and varioloid have been kept separated from those of varicella. (See Table VI, p. 1020.)

These numbers are so significant that any commentary will be superfluous. We will only observe that, if the army were to be exclusively composed—in conformity with the wishes of the antivaccinists—of never vaccinated individuals, we should have, for an average strength of 207,000 men, no fewer than 6,007 small-pox cases per year, and an annual loss of 1,561 by death from small-pox.

But perhaps it may be objected that some of our proportional figures are based upon a too small number of observations. Let us then enlarge the field of our observations, extending it to the whole period 1877-97, though as we have already said, for the first five years varicella was mingled in the statistics with variola and varioloid.

In Table VII, p. 1020, we have mingled together variola and varicella, in order to extend our examination to the whole period 1877-97.

Diagram showing the Different Mortality and Sickness per 10,000 of the Average Strength according to the Remote and Recent Anamnesis.

- A. Never variolated nor vaccinated in childhood, and not yet vaccinated in the corps.
 B. Variolated or vaccinated in childhood, but not yet vaccinated in the corps.
 C. Never variolated nor vaccinated in childhood, and vaccinated in the corps without success.
 D. Never variolated nor vaccinated in childhood, and vaccinated in the corps with success.
 E. Variolated or vaccinated in childhood, and vaccinated in the corps without success.
 F. Variolated or vaccinated in childhood, and vaccinated in the corps with success.

In conclusion, having demonstrated by the very great amount of evidence contained in the military statistics: (1) That small-pox attacks in a very much larger proportion the individuals who have never been vaccinated, and (2) that when it exceptionally attacks the vaccinated individuals it shows a very much smaller severity, we cannot conceive upon what proofs, upon what arguments, a serious scientific opposition to vaccination can be grounded.

REFERENCE.

¹ *Giornale Medico del R. Esercito*, January-February, 1899. ² The duration of service in India is generally three years, for the cavalry only it is four years, for the gendarmerie (*Carabinieri*) five years.

PEMPHIGUS CONTAGIOSUS.

By N. GORDON MUNRO, M.B., C.M. EDIN.,
Yokohama.

In Japan and China, along the whole southern coast line, it may be, of the Asiatic continent, there exists a skin affection of a comparatively trivial nature, but interesting in its close resemblance to pemphigus. This disease has not escaped the notice of Dr. P. Manson, who has given an excellent account of it in *Hygiene and Diseases of Warm Climates*, under the name of "Pemphigus Contagiosus." The Japanese name of this affection is "Tobi-hi" (sparking or leaping fire), a quite appropriate title, as the lesions resemble so closely those of superficial burns.

Pemphigus contagiosus is characterised by the occurrence of one or more bullæ, appearing simultaneously or in succession, and spreading by contagion from one part of the skin to another, or from person to person. Each bulla is preceded by a spot of hyperæmia which marks the site of the coming vesicle, and spreads with the development of the latter as a thin areola, or surrounding circle, sometimes not very evident. This spot of hyperæmia is usually the seat of a slight, rarely severe, itching, burning, or stinging sensation, which decreases with the advent of the vesicle, although it may return at a later stage, when the collapse of the vesicle brings the superficial and deep layers of the epidermis into contact. Each vesicle or bulla contains a clear fluid with a few cells from the stratum granulosum, leucocytes, and a micrococcus.

It can scarcely be doubted that this micrococcus, which was noticed by Manson, is the specific cause of the disease, and

for this reason it might be called the *micrococcus vesicans*. This micrococcus, which has a tendency to form diplococci, has been cultivated in various media by the writer. On glycerine or glucose agar-agar, it forms characteristic colonies, which have a highly polished, pure white surface, which reflects the light in a glistening manner, bearing a close resemblance to the white enamel which is used for "ringing" microscopic slides. On gelatine the cultures are not so distinctive, owing to the difficulty of keeping this medium solid during the summer months, the only season during which fresh cultures can be made. In bouillon the colonies grow slowly at the bottom of the tube, retaining their white colour, while on potato they have a pale yellow colour, but still retain their polish. I have not succeeded in reproducing the disease in lower animals, although personally and with the kind assistance of Dr. Yokura, whose work in veterinary medicine is above praise, many efforts were made in this direction. He has, however, succeeded in inoculating a patient already infected with this disease, and in making pure cultures from the lesion, so that little doubt remains as to the cause.

Photograph 1.—Vesicles are too dark, and not clearly defined in photograph.

The bullæ may reach the size of an inch or more without breaking, but usually they become flaccid when from a fourth to three-fourths of an inch in diameter, and, the contents escaping, a weeping red surface is left under the cuticle, which frequently continues to exfoliate. When the bullæ are not far apart, they often become confluent, so that an area as large as the hand may be left bare and weeping. Under treatment, however, it is rare to see so large an area. The early stages of this affection are identical in appearance with the "pemphigus vulgaris benignus" of Kaposi, and the later stages have all the morphological characters of the exfoliating type of pemphigus, without the constitutional symptoms, though in some cases such symptoms are observed. One adult, who was removed from the British Consular gaol to the Yokohama General Hospital and died within eight hours of admission, had contracted the disease two months previously, and as he had not informed the prison surgeon until a few days previous to his death of his condition, he was believed to be suffering from debility and alcoholic depression. No cultures were made in this case, but in a second case a pure culture was made. This man was discharged from the hospital cured, to all appearance, yet he was found dead some months later, with a history it is true of alcoholism, dirt, and poverty, but with extensive exfoliating lesions on the feet and legs. He attributed his disease to sleeping on the straw of an old-disused stable, but the rubbish had been cleared away, and could not, therefore, be ex-

aminated. In neither of the above cases can it be proved that this disease was directly instrumental in producing death, yet the coincidence is suggestive. Photograph 1 was taken from a child under the care of the writer who was apparently cured, but who suffered a relapse while at the seaside, which extended in an exfoliating form, so that on his return Photograph 2 was taken. It is seldom that the writer has seen marked constitutional disturbances, yet there can be no doubt that children are often not quite so robust during and after the course of this affection as formerly.

In many ways indeed this disease resembles true pemphigus, and without going so far as to say that it is a form of true pemphigus, the likeness is sufficient to deserve more than a passing notice. The pemphigus acutus infantum of Europe must be an infectious disease, and is probably identical with pemphigus contagiosus, which the writer has known to follow the ministrations of one midwife in five infants throughout five separate cases of labour.

From the description, the resemblance of this disease to impetigo contagiosa will be apparent, but the writer is in

Photograph 2.—Same as No. 1 some weeks later on return from country. I inclined to agree with Manson in the separation of the two affections. Pemphigus contagiosus does not begin with a febrile attack, does not invariably form pus, is more commonly distributed on the limbs and trunk than on the face or scalp; the scabs, or rather exfoliations, which spread round the periphery of the ruptured vesicle are not formed mainly of dried pus, but of desquamated epithelium, which may continue to exfoliate for weeks, and lastly, the invariable presence of micrococci in the fluid from the vesicles may serve to distinguish the two. On the other hand, the descriptions of impetigo contagiosa are not very consistent, and some, notably those of Dühring and Shoemaker, might possibly apply to pemphigus contagiosus. The majority of the cases which have come under the notice of the writer do not tally with those of Manson in having no areolæ, and in this way, perhaps, lean towards impetigo, but the distinction is unimportant.

The treatment is mainly local. Washing the surrounding skin with corrosive sublimate soap, sublimate or ichthyol compresses, and the use of an ointment of white precipitate and naphthol, with a dusting powder of dermatol and borax in infants, usually ends the disease in a week or ten days, but tonics are often required, and particularly if a relapse takes place. Of these, the hydrochlorates of arsenic and quinine, with perchloride of iron, are the best.

NOTE.

Since the above was written, Surgeon Sichel has contributed an interesting article to the BRITISH MEDICAL JOURNAL, in which he describes

three varieties of pemphigus contagiosus. I cannot agree with Dr. Sichel in attributing pemphigus contagiosus to "excessive sweating," and I consider the term "sudoral dermatitis" as quite inappropriate when applied to this disease. This disease is extremely infectious, and I have seen a bulla on the forefinger of a mother eight hours after its appearance on the arm of her child. Possibly, however, the vesicular eruptions associated with lichen tropicus may have some such origin.

MALARIA AND PREGNANCY.*

By F. H. EDMONDS, M.R.C.S., L.R.C.P.,
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THE coincidence of malaria and pregnancy must always cause anxiety, for the foetal life is often sacrificed and the mother's endangered and sometimes lost. The subject divides itself into the effects of malaria—intermittent, remittent, and cachectic—on, first, the period from conception to the sixth month, and, secondly, from the sixth month to the end of the puerperal period. The simple intermittent has no effect on conception, and, if mild, no influence on the mother's or child's life.

In July, 1898, I saw a young girl who for the previous six or seven months had had a slight intermittent, never going for more than a fortnight without chills and fever, which had been treated with quinine, arsenic, aconite, amongst other drugs prescribed by a dispenser. I was called in on account of persistent vomiting which had come on during the last two months, and, on examination, satisfied myself that the girl was probably at the end of the third month of pregnancy. Under treatment the vomiting—which I considered as the sickness of pregnancy—was stopped, and the pregnancy continued its natural course.

If, however, the intermittent is more acute, and the temperature rises over 104° , abortion will usually take place, as in the case of a girl who, having missed two menstrual periods, developed an acute intermittent (quotidian), and on the third day, with a temperature of 104.8° , passed a complete membrane containing a foetus before she had time to get the quinine mixture made up.

In all cases of pregnancy seized with acute intermittent the patient complains of the pains in the abdomen, and the uterus can be felt hard and firmly contracted; but if quinine be given and the temperature does not rise to 104° , each succeeding paroxysm will have less effect on the uterus, and mother and child will be saved.

The (bilious) remittent malarial has the same effect on pregnancy as the simple intermittent, only differing in degree, the fever being usually higher; abortion is more common, and is often followed by a very large hæmorrhage of florid blood. Here also, if the case comes under treatment early, and the pregnancy be not taken into account, there is not much greater danger to the mother than in cases where there is no pregnancy. Malarial cachexia, notwithstanding the great depression and apparently low vitality of the subjects, is no bar to conception, and does not interfere with the progress of pregnancy, nor need its treatment be neglected on account of the pregnancy.

Last year a young girl came to town from up the river Demerara. She was said to have had low fever every fourth day for nine months, and was, when I saw her, in a chronic malarial cachexia. I also found that she was about four months pregnant. After taking iron, bromides, and nuxvomica she improved greatly, and returned to her home with every prospect of fulfilling her time successfully.

The absence of effect on pregnancy in these cachectics is probably due to the absence of high temperatures.

In the second period the complication of pregnancy with malaria gives rise to a much more acute and dangerous condition, due in great part to the reaction of the now partly independent foetus. In this period, if the woman be attacked by an intermittent during the first paroxysm, the foetal movements become very strong, and cause rather severe pain; they can be seen in many cases until the temperature passes 103° , when a painful, continued cramp of the uterus appears to limit the foetal movements; in this case the foetus may die, or it may live to react against another paroxysm; but in either case the mother will say she did not feel any more movement after such a certain paroxysm, although the next paroxysm will still be marked by the strong and painful contraction of the uterus, and soon a paroxysm is accompanied by a miscarriage of a foetus bearing evidence of intrauterine death of some few days, peeling epidermis and mottling, and the placenta is discharged of a heavy dull blue colour.

In October last year I saw a woman who was in her eighth month. At the time she was in the hot stage of the fifth paroxysm of an intermittent

(tertian), temperature, 104.6° ; the movement had been violent for the two first attacks, but had not been felt at the later, nor during the intervals; the uterus was painful and very hard. Before she could get the prescription made up, she had miscarried, the foetus peeling, and the placenta gorged and leaden-coloured.

If the intermittent be not treated, the same painful, hard contraction of the uterus takes place at the succeeding paroxysms.

A bilious remittent malaria complicating the second period is the most serious condition we have to deal with; the reactions of the foetus are marked at first, but as the fever remits become weaker, and seem to fade away gradually, and not to cease after a certain definite effort. The contraction of the uterus is not so firm, but is painful, and there is much soreness and tenderness over the uterus and usually over all the abdomen. The adynamic character this fever tends to causes delay in miscarriage or in parturition, and at the same time does not admit of the use of ergot, or of chloral, so that the process of delivery is very slow, lessening the chance of saving the child's life, which otherwise might be effected more frequently than in intermittent. However, if the temperature has risen much over 104° , the foetus will be dead before delivery.

When this bilious remittent appears during or just after parturition, the mother's life is placed in the greatest danger. I have seen young and healthy women pass to the last week of pregnancy in good condition, and then fall off, become sallow-looking, have low remittent fever; during labour the temperature has risen, the tongue become thickly coated with a yellow fur, the patient become very restless, the pains weak and long drawn; after delivery there has usually been gushing of fluid dark blood; then an improvement for—usually—48 hours, when a relapse (another paroxysm?) comes on with higher temperature, deeper jaundice, greater weakness and constipation, which, on relief being given by an enema, results in the passage of a large, black, stinking stool. After five or nine days' alternations—each marked by increasing weakness—the patient dies quietly, with many appearances of puerperal fever, but having had her lochia of good colour, quantity, and odour; and having had no uterine pain or tenderness. In these cases the child is frequently strong and healthy, but there is not a more dangerous condition for a woman than to be seized by a malarial remittent during her puerperium.

Malarial cachexia affects the second period of pregnancy much as any other condition of debility. The sufferer is reduced to a very low state by the cachexia, which is an asthenic state much increased by the disordered digestion usually present in these cases, where the stomach refuses to retain any medicine, and rejects even the lighter forms of nourishment. Labour is very slow and lingering, with weak inefficient pains, and usually requires the assistance of forceps. The child is often born big and strong.

Twenty years' active work in malarious districts has convinced me that malarial fever is responsible for a large number of stillbirths. I am constantly seeing pregnant women suffering from untreated malaria, and always find that in the first paroxysm of intermittents, during the ague stage, the foetal movements are very strong and frequent, and the uterus not contracted. During the hot stage the uterus contracts more strongly, and continues contracting so much and so firmly that the foetal movements cannot be felt. I have always prescribed quinine, 5 gr., every four hours, and in cases where the temperature had not risen above 103° , and in which foetal movements could still be felt, have seen the malaria checked and the pregnancy proceed to term. I have also often seen, where the foetal movements had ceased after a previous paroxysm, and where the patient commenced taking quinine as soon as it was ordered, the miscarriage in a few hours of a foetus showing signs of intrauterine death of some days before the quinine treatment was commenced. I have seen many cases where miscarriage has taken place, usually with evidence of intrauterine death of many hours, in patients whose malaria had remained untreated. I have also known many cases of pregnant women during the earliest months taking 10 and 15 gr. doses of quinine and continuing the pregnancy to term.

I am strongly of opinion that malaria, by rapidly raising the body temperature, tends strongly to abortion and miscarriage, and also that the early use of quinine, by reducing temperature, lessens very considerably the stillbirth rate.

* Presidential Address delivered to the British Guiana Branch.