Diseases and Abnormalities of Pregnancy and the Puerperium among Asiatic races in a district in Malaya.

I do not presume in this thesis to contribute anything new in theory or data. Work in a small hospital in a tropical out-station is varied, rich in experience, and interesting, but demands rather a little knowledge about everything than the detailed and specialised knowledge about any one subject which is so necessary for research; a knowledge which, too, is so often associated with elaborate and expensive equipment, difficult to procure in Malaya, (except perhaps at Singapore,) more especially during the past five years, when economy and drastic retrenchment have been the order of the day. True, the process of "doing without" has had its advantages,- the native population on the whole has not been at the mercy of new and untried drugs and experimental remedies, while the medical officers in charge in "ulu" stations have had to work so much on their own, often without common diagnostic aids, and without the advice and second opinion of the friend or specialist, that perhaps their five senses have benefited somewhat in diagnosis through much usage, and a degree of commonsense acquired through much accumulated experience, including the many mistakes!

TOPOGRAPHY. In dealing with the difficulties that beset the the path of the medical worker in any new country, one must take into account the mentality of the population among whom he lives, and, as with every race, environment makes the man. The whole of Malaya is not more than 52,500 square miles in extent, and yet within this small area practically every race and nationality under the sun are represented. Even a Red Indian "Laughing Thunderface" made its entrance into this world in the Womens' Hospital at Kuala Kangsar , unfortunately to succumb a few months later to cerebral malaria. Yet all

live harmoniously together'.

Negri Sembilan, the smallest of the four states comprising the Federation is situated near the middle of the Malay Peninsula, and is only 2,550 square miles in area, and Kuala Pilah district occupies about a third of this state. It is a district of jungle clad hills and fertile cultivated(rice) plains, while encircling these plains and dotted all over are rubber plantations-one of the staple industries of Malaya. Kuala Pilah district is possibly one of the largest padi districts (administrative)in the whole of Malaya,-over I6,000 acres being under cultivation,-a fact which has an important bearing on malaria and its sequelae in relation to pregnancy in this part.

The climate is hot, moist, and equable, with a high humidity,- the average shade temperature being about 80 to 85 degrees F. and the average monthly rainfall approximately 7 to 8 inches.

POPULATION. The Malays constitute the peasantry of the country as well as the ruling caste, and in this district, unlike many more urban areas, actually outnumber the immigrant population. The figures for the I93I census were as follows:-

Malays.	34,8I8.
Chinese.	23,I28.
Indians.	8,978.
Others.	I,I43.

The peasant type, courteous, but not subservient,-truly "Nature's Gentlemen" at their best,- live in wooden or attap houses usually raised from the ground on stilt-like pillars to counteract the evil spirits, whether in the form of wild animals, or ground damp(with malaria in its trail), or the "djinns" of the jungle. As a result the houses are usually well ventilated in contrast to the shop-houses of the Chinese or the coolie quarters of the Tamils, and in fact, sunshine and fresh air are not lacking for the Malay woman and her children, and they lead a placid, contented, and well ordered life. Indeed the whole atmosphere of a typical Malay kampong(village) is peaceful, cheerful, and natural.

These kampongs are connected up with one another and with the main roads by a network of bridle paths,too narrow for the ubiquitous,noisy,and smelly car,and too dangerous usually for a motor bycycle,(though both the midwife and the dresser make use of one when they can)-but ideal for ordinary push bicycles which is the method of locomotion apart from walking,-so that the peace of the locality is not disturbed,and "nerves" are practically unknown. Once a year the padi fields have to be dug up and planted,but otherwise there is very little hard manual work to be done,-a lazy life sitting in the tropical sunshine gossiping idly all day long,-gazing proudly on the land which they own,and watching their food for the next year ripen under their eyes. It is little wonder that many of the educated English speaking Malays;clerk,dresser or professional man,are not ambitious or money seekers,but prefer to return at the end of a day's work to the peace of their kampongs, and,if they accumulate any money at all,to buy more land for themselves or their families,or alternatively,to live the rest of their lives on a very modest pension.

The Chinese on the other hand bring their national characteristics with them. Plodding and industrious,they work hard all day long either on vegetable "farms",or as estate coolies,as well as constituting largely the artisan and shop-keeping class,-saving every cent until ultimately they become the millionaires of the country. Theirs is more the town life attitude,quick to make use of,and enjoy all modern inventions, slow but sure thinkers, and appreciative of good value for their money,equally apparent when it comes to Western methods of medicine as in other realms.

The Tamils are a difficult race to fathom,especially the cooly class. Childlike and full of superstition,it is almost impossible and useless to appeal to reason,though they have quick receptive minds and learn by heart readily. They are unconscious examples of the "mob"or herd pschyology,hating to be alone,and laughter and tears are never far apart. They provide mainly the estate "labour force",and being deft fingered they

do their job well.

All these three main races have a nucleus of the "white collared" class,-clerks,dressers,teachers,doctors,health inspectors,engineers overseers,surveyors,etc.designated the "krani" class,though a "Raja" or Royal Malay remains a Raja however menial his job may be.

Like human nature everywhere the Asiatic appreciates quick results such as in normal midwifery and minor surgery, but there is not the incentive to enter hospital for long protracted courses of medical and ante-natal care. Unlike in the Northern countries,lying in bed is not a pleasant process for Asiatics and Europeans alike. It is hot,sticky,and uncomfortable,while in comparison,the cheerful atmosphere of the kampong for the Malay,the busy town life night and day,centreing round the coffee stalls for the Chinese,and the intensely cultivated herd instinct of the Tamils from their teeming Southern plains of India,-all is so antagonistic to the discipline and comparative cleanliness of a hospital ward, and its somewhat depressing influence,that after about ten days the Asiatic patient literally takes up his or her bed and walks out,unless there is some powerful factor such as the subsequent loss of a job to prevent them ! Then too,the woman to the Asiatic is still much the inferior sex,(more so with the Chinese and Indian than the Malay)- an instrument of pleasure or usefulness,who has to eat the crumbs that fall from her master's table,and pays for it all by that bugbear of of workers in tropical maternity hospitals-"anaemia of pregnancy" due to constant undermining of her health by repeated pregnancies insufficient food,and the cares of a large and noisy herd of children whom she cannot leave unattended to enter hospital for prolonged rest and treatment even if she were willing... True they bear it all with the philosophy of their respective races that too often blinds one to the tragedy and wastage of it all,-the stoicism of the Chinese,-the fatalism of the Malay,(commonly called the"Will of Allah"), while if the

Tamil woman thinks at all,she certainly has rarely got the stamina or energy even to protest. It is more than primitive Nature,-superadded is the lassitude of a tropical country where the humidity is high,and the climate without seasonal variation,-where a diet rich in carbohrdrate grows easily, sufficient to allay hunger,and therefore even this driving force is lacking to make the effort to obtain a more varied and energy giving diet.

SUPERSTITIONS. Negri Sembilan is a protectorate only,and in many respects compulsion in health and medical matters cannot be enforced,- the individual still having the right to die in their own kampong unaided by Western methods of medicine if they so prefer,nor is death registration by qualified medical people a necessity. Out of I,278 deaths in the Kuala Pilah district in I932,only 249 took place in the Government hospitals, and out of 2,057 births only 206 were confined in the hospital, and about I00 more were examined at least once during the ante-natal period,-a total of 306,and yet there were no qualified outside midwives practising in the district till near the end of I932!- a somewhat startling record for this very civilised and fairly easily accesible part of the country. The Indian "Dhai" or native handywoman has her counterpart in Malaya in the local "Bidan" too often,(but by no means always) filthy,toothless, ignorant hags,and the customs and superstitions of all the three races,more especially in the rural areas,constitute some of the most difficult problems for successful midwifery. When it is realisedthat;-

I. Abdominal operations(including Caeseraen section) are refused by 75% of the rural population until the patient is almost moribund.

2. Chloroform or any general anaesthetic,which in their own words makes them "drunk"(a crime against Mohamedan law!) is only accepted when pain is severe,and the patient on recovery expects to have been cured of all her ailments!! There is therefore little or no place for it for preliminary diagnostic examinations.

3. When a blood transfusion service was suggested in the earlier part of I934,no volunteers in the district were forthcoming even for quite a substantial fee,and it was rather impossible for the person wishing to do the transfusion to offer to set the example! Even the husband of a Tamil woman,- himself well educated and in good health, refused to offer his blood to save his wife. The general tendency to anaemia,too, in European and Asiatic alike,makes this procedure slightly more of a risk than usual. If modern technique can "preserve" human blood for this purpose,it will be an untold blessing for more backward countries.

4. The staff of the hospital,-a total of 9, excluding a matron, Malay midwife,and health staff nurse, was,at the latter part of I933 reduced to one 3rd. year nurse,two 2nd.year, and five newly joined probationers,(aged I7 to I8 years) - mainly due to resignations following marriage.This staff(Asiatic) was supposed to look after a daily average of about 60 patients including many sick infants and children,suffering from diverse diseases,and during "rush" periods the number of patients was much higher.,not to mention a large out-patient department and the usual cliniques. Their task at times was really Herculean, and I have nothing but admiration for the way in which they rose to the occasion.

Realising all this,it is easy to see that treatment in midwifery,as recommended and practised in European countries, has often to be considerably modified to suit the outlook of less advanced races. In addition,the Malay religion has so many rites and customs connected with pregnancy and birth, difficult to carry out in a hospital,that it is very rare for a Malay woman to enter hospital for her confinement until after the local bidan has done her worst,while distance and poor transport facilities,as well as the lack of ready money to pay for hired cars are a powerful factor in preventing all races from making use of the hospital facilities. In contrast,though, is the attitude of a benignly disposed Government to popularise

prophylactic treatment especially in the realm of "anaemia" by admitting, free, to all Government hospitals, estate Tamil coolies from the seventh month of pregnancy. When one realises that the aforesaid cooly is virtually forced to enter hospital under the Indian Labour Code, or forego both her job and her "maternity benifit",, and thus often spends a few weeks in hospital prior to confinement, both on account of distance, and of complete lack of intelligence re "dates", it does give one an unrivalled opportunity for study and ante-natal treatment of this particular class of patient.

RACIAL DIET and BIRTH WEIGHT.

When one tries to compile statistics about these Eastern races, one is immediately confronted by the absence, or lack of accesibility of previous records, and of any references in literature as to what constitutes "normality". For instance, a passing glance reveals the fact that the average so called normal weight of the Malay, Chinese , or Indian baby at birth is well below the average of European countries, and also vary considerably from one another, but there is no guide as to what it should be. Racial diet is of courseof almost as great importance as environment in producing the physical characteristics of a race, and this is well exemplified in a study of these three races living side by side. Briefly, the main points of difference in the dietaries are;-

I. The marked preponderance, proportionate and actual, of carbohydrate in the Tamil menu.

2. The proportionate marked preponderance of meat and vegetable in the Chinese menu.

3. The preponderance of carbohydrate in the Malay menu, but also, the addition of fresh fruit, and fish, goat's milk, eggs, and chicken.

Out of 214 "selected" normal cases during the years 1931 to 1934(Oct.), the following information re birth weights was gleaned. The figures for the Tamil class are therefore even lower than the 6lbs.13ozs. quoted for the coloured races at the John Hopkins Hospital in America by Williams. (Obstetrics)

	Tamils.			Chinese.			Malays.			Bengalis.		
	No.of cases.	Wt.	Hb.	No.	Wt.	Hb.	No.	Wt.	Hb.	No.	Wt.	Hb.
I93I.	-30.	5/I5.	57%-	-34.	7/4.	60%-	-I.	5/I0.	55%-		nil.	
I932.	32.	6/3.	58%-	-23.	6/9.	58%-	-2.	6/-.	50%-		"	
I933.	22.	5/I5.	57%-	-I5.	6/I0.	62%-	-3.	6/6.	62%-	-4.	6/8.	6I%
I934.	25.	6/I.	59%-	-I6.	6/I2.	60½-	-2.	6/II.	68%-	-5.	6/5.	57%
Total.	I09.	6/I.	58%	88.	6/I3.	60%	8.	6/3.	59%	9.	6/7.	59%

Wt.- refers to the average weight at birth.

Hb.- refers to the average haemoglobin index within a week previous to confinement.

These selected normal cases had to satisfy the following requirements;-

I. A minimum Hb.index of 50% at time of confinement.

2. Absence of Venereal disease.

3. Absence of active malaria as evidenced by parasites being present in the blood,and of latent malaria as evidenced by an enlarged spleen.

4. Absence of respiratory or cardiac disease.

5. Absence of urinary disease.

6. No ante-natal haemorrhage.

7. Freedom from delayed,instrumental,or abnormal labour from whatever cause.

8.Production of a healthy living child.- Mild degrees of asphyxia were overlooked.

9.A puerperium free from haemorrhage or puerperal pyrexia as understood in Europe.

The largest child of this group weighed I0lbs.6ozs (Malay-kraniclass), and the smallest-4lbs.I2ozs,(Tamil-cooly class.) Cases of multiparity were also excluded.

When one considers that out of this group only I9 were free from accariasis or anklostomiasis,and 7 had a normal cervix out of those examined.while 90% suffered from dental caries, the "normal" belongs more to the class C3 category than to the AI.

The figures quoted above are ,of course,misleading

as in the case of nationalities other than the Tamil cooly, admission to hospital usually implied delayed labour or abnormality, and the "normals" are a very very small percentage of the total births in the district, but they do seem to indicate generally the influence of racial diet

HAEMOGLOBIN INDEX.

Another striking factor in the table quoted above was the low haemoglobin index. Even although recent researches tend to prove that the haemoglobin is diminished during pregnancy, (but only relatively so) owing to an increased volume of blood, yet normal percentages according to the European standard are rare even among non-pregnant patients. This subject will be dealt with in more detail under "anaemia" of pregnancy", but meanwhile table 2. gives some idea of the average index of pregnant patients on admission to hospital, and iron in combination with a diuretic was given as a routine t.d.s. to all ante-natal patients.

Table 2.----"K" refers to the krani class and "C" to the cooly class, based on income also.

I93I. and I934 were taken for comparison.

	Malays	Chinese		Tamils		Others
		"C"	"K"	"C"	"K"	
I93I.	48%	55%	59%	47%	61%	-
I934.	54%	55%	58%	52%	58%	52%

These figures are interesting from an economic point of view as I934 represented the third year of "slump" conditions, but also followed two good padi harvests. The rural population appeared to benefit as far as food was concerned, and the Tamil krani class to lose, true to facts, but the apparent increase in the index of the Tamil cooly class was really due to the repatriation of hundreds of the less fit.

PREMATURITY, STILL-BIRTHS, and MISCARRIAGES.

Out of a total of 807 patients (including 85 ante-natal not subsequently confined in the hospital), admitted from I93I to I934 (Oct.) of whose case records a rather hasty survey was made before departure on leave, there were 221 cases of premature birth, still-birth, and miscarriage.

These were divided as follows;-

Table 3.

I. PREMATURITY.(This implied a birth weight of less than 5 lbs.)

Malays.----	-II.	
Tamils.----	89.	
Chinese.---	9.	
Others.----	I.	Total.--- II0.

Out of these II0 babies 33 died before leaving hospital.

2. STILL-BIRTHS. (a).

premature.

Malays.---	I.	
Tamils.---	26.	
Chinese.---	2.	
Others.----	-	Total.--- 29.

(b).

full-term.

Malays.---	7.	
Tamils. ---	I7.	
Chinese.---	I3.	
Others.---	-	Total.--- 37.

3. MISCARRIAGES.

Malays.---	I2.	
Tamils. --	23.	
Chinese. --	6.	
Others.---	4.	Total.--- 45.

221.

CAUSES of PREMATURITY.

As stated already, figures and percentages are useless where proportionate to numbers admitted. Separate statistics for Negri Sembilan were published for I932 and I933 only,but the proportion of confinements in the hospital to the total number of births for these two years was almost identical;-

Malays.---	I½%.
Tamils.---	50%.
Chinese.--	9½%.

On the other hand percentages within a group such as

prematurity might convey some slight idea of the frequency of the factors causing this abnormality. Here again, though, one is confronted by one of the main difficulties in compiling statistics about Asiatics, viz- the multiparity of diseases from which they suffer. One of my patients had no fewer than I3 different pathological features, though most no doubt were inter-dependent on one another. The combination of malaria, syphilis, gonorrhoea, chronic nephritis, ascariasis and anklostomiasis, pneumonia, and severe secondary anaemia is by no means uncommon! If superadded is pregnancy and all its possible complications the wonder is that the patient ever comes through alive. Thus in table 4 (see below) the most likely predominant cause of the premature birth has been given, but "anaemia" may include also a positive Wassermann, malaria, acute or chronic, malpresentations, and in fact any of the other possible causes, and the same applies to the other headings. When dealing with individual headings therefore, such as malaria affecting pregnancy, there is bound to be much duplication of figures.

Table 4.

Causes of premature births.

Cause.	Tamils (89)	Chinese. (9)	Malays. (II)	Others. (I)
ANAEMIA. (2I)	20. (22%).	_	I. (9%).	_
ALBUMINURIA. (I0).	6. (7%)	2. (22%)	2. (I8%).	_
A.N.HAEMORRHAGE. (I).	_	_	I. (9%).	_
INDUCTION. (4).	4. (5%).	_	_	_
MALARIA. (22).	I8. (20%).	2. (22%).	2. (I8%).	_
" (chronic) (I).	I. (I%).	_	_	_
MULTIPLE BIRTH. (26).	20. (22%).	3. (33%).	3. (27%).	_
RESPIRATORY DISEASES. (6).	5. (6%).	I. (II%).	_	_
SYPHILIS. (7).	6. (7%).	_	I. (9%).	_
" (suspected).	I. (I%).	_	I. (9%).	I.
UNKNOWN. (9).	8. (9%)	I. (II%).	_	_

Out of these 110 premature births there were 33 neo-natal deaths divided as follows;-

Table 5.

Cause.	T.(23).	CH.(3).	M.(6).	O.(1).	
ANAEMIA.(13).	9.(39%)	_	4.(66%).	_	13
ALBUMINURIA.(3)	2.(9%).	1.(33%).	_	_	3
A.N.HAEMORRHAGE.	_	_	1.(33%).	_	1
MALARIA.(8).	8.(35%).	_	_	_	8
MULTIPLE BIRTH(2).	1.(4½%).	1.(33%).	_	_	2
SYPHILIS.(4).	2.(9%).	1.(").	1.(").	_	4
"(suspected).(1).	_	_	_	1.	1
UNKNOWN.(1). (following external version).	1.(4½%).	_	_	_	1
Total.	23.	3.	6.	1.	33

The average birth weight and Hb. index in this group was;-

		Hb.(maternal)
Malays. --	2 lbs. 13 ozs.	(36%).
Chinese. --	3 " 13 "	(53%).
Tamils. --	3 " 11 "	(41%).
Others. --	4 " 8 "	(50%).

Once again the weight graph appears to follow the Hb. index , though the cases reported are far too few to draw any conclusions on this point.

We see therefore from these tables(4,5) the first marked general comparison between European and American statistics and those of the Asiatics of the Kuala Pilah district,in that "anaemia" or better called "anaemia of Pregnancy",and malaria take first place as factors producing premature birth in this district,albuminuria and syphilis thus being de-promoted. As already stated earlier,the district is not yet "surgically minded",and therefore amputation of the cervix and other operative procedures as causes were never found. So far I have made no notes re placental infarct

and its occurence in premature birth. Continuous overwork did not seem to play a very great part in its production judging by the Chinese, and any apparent "gain" among the hospital patients admitted a few weeks before confinement was, in my opinion, more likely to be due to the increase in both the quality and the quantity of the food provided compared with their own homes, and to the iron and marmite "pumped" into them.

Treatment of prematurity.

This followed the usual European methods, both prophylactically and curative, special care being taken to avoid chill during the nightly drop of temperature, in spite of being only 2½ degrees north of the equator! This drop is sometimes as much as 20 degrees, and the relatively high humidity of the district predisposes to respiratory complications especially fatal for the premature child. Where artificial feeding had to be resorted to, lactogen to which sodium citrate had been added was the food of choice,- cow's milk being almost unobtainable except among the Bengalis, and goat's being rather limited to a few of the kampong dwellers. The ordinary "tinned" milk so beloved by the Tamils and the Chinese, one of the more doubtful of the benefits brought in the train of "civilisation" tends to become rancid within 24 hours after opening.

The mortality from prematurity appears to be high, but when one considers that the maternity ward at night had to be left in charge of a pupil "bidan", raw and untrained, from a kampong, who also had to prepare and sterilise the usual maternity and labour room dressings,- supervised by an hourly visit from a nurse, the wonder is that so many survived, including one infant 3 lbs at birth, who is still alive today 18 months old. Of seven others whose weight averaged 3 lbs 10 ozs five were still alive in October of last year, one had died, and one could not be traced.

CAUSES OF STILL-BIRTH. and MISCARRIAGE.

Table 6.

Causes of Still-birth. (a). Premature.

Cause.	T.(26).	CH.(2).	M.(I).	O.nil	
ANAEMIA.(I0).	I0.(39%).	_	_	_	I0
ALBUMINURIA.(3).	3.(I2%).	_	_	_	3.
MALARIA.(5).	5.(I9%).	_	_	_	5.
MALPRESENTATIONS & TREATMENT.(2).	I.(4%).	_	I.	_	2.
MULTIPLE BIRTH.(2)	I.(4%)	I.	_	_	2.
MALFORMATION.(I).	I.(4%).	_	_	_	I.
SYPHILIS.(4).	3.(I2%).	I.	_	_	4.
" (suspected)(2)	2.(8%).	_	_	_	2.
Total.	26.	2.	I.	_	29

(b). Full-term.

Cause.	T.(I7).	CH.(I3).	M.(7).	O.nil	
ANAEMIA.(I).	I.(6%).	_	_	_	I.
ALBUMINURIA.(5).	I. "	4.(3I%).	_	_	5.
A.N.HAEMORRHAGE (3)	I.(")	2.(I5%).	_	_	3.
CONTRACTED PELVIS & TREATMENT.(3).	_	2. "	I.(I4%).	_	3.
MALARIA.(3).	3.(I8%).	_	_	_	3.
MALPRESENTATIONS & TREATMENT.(I3).	3. "	4.(3I%).	6.(86%).	_	I3.
SYPHILIS.(4).	4.(24%).	_	_	_	4.
" (suspected)(5)	4. "	I.(8%).	_	_	5.
Total.	I7.	I3.	7.	_	37.

The above table reveals therefore that premature still-births are approximately in proportion to the causes of premature birth and neo-natal death due to prematurity, with anaemia of pregnancy and malaria topping the list once again and albuminuria and syphilis next.

But the full-term still-births approximate more to the European standard in that complications of labour are outstandingly first, among the foetal mortality, with syphilis and albuminuria next. The apparently favourable preportion for the Tamil class can be accounted for by the better opportunity for ante-natal treatment among this class, and the smaller average size and more compressible head of the baby.

Table 7.

Causes of Miscarriage.

Cause.	T.(26).	CH.(6).	M.(I2).	O.(4).
ANAEMIA.(6).	5.(22%).	_	I.(8%).	_
ALBUMINURIA.(5).	4.(I7%).	_	_	I.(25%
A.N.HAEMORRHAGE(I).	I.(4%).	_	_	_
FIBROIDS.(2).	I. "	I.(I7%).	_	_
GONORRHOEA etc.(3).	I. "	I. "	I. "	_
MALARIA.(8).	6.(26%).	I. "	I. "	_
RETROFLEXION.(2).	I.(4%).	_	_	I. "
RESPIRATORY DISEASES.(2).	2.(8%).	_	_	_
SYPHILIS.(9).	2. "	2.(34%).	4.(33%).	I. "
" (suspected).(3).	_	I.(I7%).	2.(I6%).	_
UNKNOWN. (? self induced.)	_	_	3.(24%).	I. "
Total.	26.	6.	I2.	4.

From these figures it appears that syphilis in the Kuala Pilah district plays a greater part in the production of abortion and miscarriage than Williams cares to give it in America, (Obstetrics) or Cruikshank in Glasgow.

A comparison of tables 4,5,6,&7, shew;-

I. The relative importance of anaemia of pregnancy in the Tamil class as opposed to the Chinese and Malay,-no foetal deaths, miscarriages, or premature births being attributed to this cause among the Chinese, while 3 out of the 4 casesof the Malay column in table 5 were triplets, (the mother's Hb.

index being 20% only.) This rather supports the dietary theory as a factor in the causation of this disease.

2. The relative importance of albuminuria among the Chinese in the later months of pregnancy as opposed to the Tamil class in the earlier months, the Tamils not being so able to fight the toxaemia.

3. The importance of syphilis and malaria in all the classes of the community.

A study of the obstetrical "histories" of these nationalities revealed the rather startling fact that out of every 3 pregnancies there were only 2 survivors over 3 years of age! I93I and I934 were once again taken for comparison.

Table 8.

	No.of cases.	No.of Preg.	Ch. alive.	Ch. died.	Misc.
I93I. Tamils.	II2.	306.	5I%.	42%.	7%.
I934. "	52.	I27.	62%.	32%.	6%.
I93I. Chinese.	50.	I64.	62%.	32%.	5%.
I934. "	24.	98.	62%.	30%.	8%.
I93I. Malays.	32.	I07.	67%.	25%.	8%.
I934. "	42.	I63.	63%.	33%.	4%.
I934. Others.	8.	2I.	57%.	33%.	I0%

Apparently a slight improvement for the Tamils, no change for the Chinese, and a noticeable trend in the wrong direction for the Malays, is implied in the above figures, but the factors affecting infantile mortality in the district are many and varied, and will be discussed later.

GROSS FOETAL MORTALITY.

The gross foetal mortality for the period was as follows;- there being 8 more neo-natal deaths in addition to those quoted in table 5.-

Malays.---	I4 deaths	out of 53 births.	26%
Chinese.--	I7 "	" " 20I "	8%
Tamils. --	66 "	" " 408 "	I3%
Others. --	I "	" " I3 "	8%

14%

These 8 neo-natal deaths were due to various causes-

A. Maternal.

Cause.	T.	CH.	M.	O.	
I. MALARIA.	I.	_	_	_	
2. Typhoid fever.	_	I.	_	_	
3. SYPHILIS.	_	_	2.	_	
Total.	I.	I.	2.	_	= 4.

B. Foetal.

Cause.	T.	CH.	M.	O.	
I. BRONCHO-PNEUMONIA	2.	_	_	_	
2. PEMPHIGUS & SEPTICAEMIA.	I.	_	_	_	
3. GASTRO-ENTERITIS.	_	I.	_	_	
Total.	3.	I.	_	_	= 4.

Unfortunately in the published records for the state (published separately in I932 and I933 only,) the total numbers registered for still-births and neo-natal deaths (I933 only) in the district are not given under separate nationalities,but for I933 the total gross foetal mortality was as follows;-

	M.	CH.	T.	O.	
Total births.	I6I7.	525.	I87.	3.	= 2326.
" still-births. (all nationalities),					I26.
" neo-natal deaths.	"	"			237.
" still-births & neo-natal deaths					= 363. = I5% births

Many cases of still-birth are not reported nor in fact can death registration ever be reliable until it is compulsory for qualified medical practitioners only to sign the certificates. "Causes of Death" are somewhat monotonous and misleading,as almost every disease to the Malay is "fever". and the main symptom attached to differentiate them. Malaria

is the "cold" or "teeth" fever,associated with rigors and shivering. Bronchitis and pneumonia are the "cough" fevers, tuberculosis being still further distinguished as the "dry" cough fever. Dysentery,cholera and typhoid are all "diarrrhoea fevers etc. Usually "fever" alone is the diagnosis,like influenza,covering many sins!,while "haemorrhage" is the title chosen for any disease with visible bleeding, in the pregnant and non-pregnant alike.

The percentage of still-births in the district to total births for I932 was 4%,and for I933,5%.

MULTIPLE BIRTH.

The proportion of I:80 appears to be slightly exceeded in the hospital returns in spite of the warmer climate(vide Williams),but again figures for the whole district could not be compiled from the published records as multiple pregnancy was not recorded separately.

Table 9.

A.& W. = alive and well in Oct. I934.(child).
N.T. = not traced " " "
N.N.D. = neo-natal death. "

Nat.	Sex.	Maternal disease.	Subsequent hist.
Malay.	same.	_	N.T.
"	"	_	A.& W.
"	2F.&IM. (triplets)	anaemia (25%)-died.	N.N.D.
Chinese.	same.	_	I " I.A.&W.
"	"	_	I A.& W. 2nd.-still-birth, mal-pres
"	"	_	A.&.W.
"	"	bad obstetrical history.	"
"	"	albuminuria .	N.T.
Tamil.	different.	_	N.N.D.
"	"	_	N.T.(premature)
"	"	S.T.malaria. W.R.positive	N.N.D. "
"	same	" -died.	"
"	Different.	W.R. positive.	I still-birth I.N.T.
"	same.	S.T.malaria.-died.	N.N.D.(premature

Tamil.	same.	S.T.malaria. W.R. positive.	N.N.D.
"	"	" .	I.A.&.W. I.still-birth
"	"	anaemia(30%). + died.	Prem. stillbirth
"	"	W.R.positive.	A.&.W.
"	"	S.T.malaria,anaemia(30%) bad obstetrical history.	N.T. premature
"	"	bad obstetrical history.	I.A.&.W. I.N.N.D.
"	different.	" "	I.A.&.W. I.still-birth.
"	same.	W.R.positive.	I.A.&.W. I.still-birth (meningocele)
Other.	"	—	Died I yr.

Totals.

Malay.	3	out of	53	live births.	viz.	4½ : 80.
Chinese.	5	"	20I	"	"	2 : 80.
Tamil.	I4	"	408	"	"	3 : 80.
Other.	I	"	I3.	"	"	6 : 80.

6

Infants.	A.&.W.	N.T.	Still-birth or death within I to 3 years	
Malay.	2.	2.	2.	
Chinese.	5.	2.	3.	
Tamil.	6.	7.	I5.	
Other.	—	—	2.	
Total.	I3.	II.	23.	= 47.

Compare these with the returns for prematurity.

Total.	35.	II7.	69.	= 22I.

viz. More than twice the percentage traced and found alive.

OTHER COMPLICATIONS of PREGNANCY.

There were 3 cases among the 724 patients recorded, two being Malay, and the third an Indian clerk's wife.

I. ECTOPIC PREGNANCY.

Owing to the prevalence of gonorrhoea among the Asiatic population, this condition is exceedingly difficult to diagnose as both tubes may be tender on palpation, and the tube not affected by the pregnancy may already be the seat of a salpingo-oophoritis. The Indian woman had neither a "missed" period nor vaginal bleeding, but severe pain in the abdomen and fainting attacks representing early attempts at rupture, -very similar to acute renal colic. All three patients were transferred to the main state hospital for operation, and all recovered. It is interesting to record a case of apparent ruptured Graffian Follicle in a European patient about five years ago in Malaya, the abdomen being much distended with blood before operation.

2. DISEASES of OVUM.

(A). HYDATIDIFORM MOLE.

This abnormality was found in three patients, one of each nationality. With the Tamil woman it was her first pregnancy, and she has since given birth to a full time normal child. There was a trace of albumen in her urine. The Chinese patient was admitted moribund, and the condition was found on post-mortem examination, -it being the 7th. pregnancy, 5 normal confinements and I miscarriage(6th.). Her Hb. index was I5% on admission after haemorrhage for 7 days.

The third, a Malay, was also a multipara with a good obstetrical history and a negative W.R. The ages were approximately, T. I7. CH. 36. M. 25., and the period of amenorrhoea 3,5, and 4 months respectively, although the Malay patient appeared to have recurrent monthly slight bleedings.

The Tamil and Malay patients were curetted I0 days after the mole was removed digitally, and given the usual warnings.

(B). CARNEOUS MOLE.

One case only was recognised, not being passed

till term, but no doubt many ordinary abortions would come under this heading.

(C). HYDRAMNIOS.

Three typical cases were seen, minor degrees not being recorded, again one of each nationality.

No.I. Chinese. 4th. P. (2nd. and 3rd. died one week old.)
Urine,-nil, W.R. neg.
Confinement normal and child still alive(3yrs)

No. 2. Tamil. 7th P. (3 alive, 4th,5th,and 6th.died 3 to 6 months).
Urine,-nil. W.R.positive. (Ante-natal patient)

No. 3. Malay. Multipara. Urine,-nil, W.R. negative.
Confinement,- child had a congenital stenosis of the anus,and died on the 4th.day.

.FOETAL ABNORMALITIES. (A). HYDROCEPHALUS.

Two cases ocurred,one in a Chinese and one in a Tamil,while a third (Malay) was seen in the kampong.

No.I. Chinese. 3rd P. (2nd.died at one month).
Urine,- albumen present. W.R.negative.
Confinement,- perforation done.

No. 2. Tamil. Ist.P. Hb.30%. Spleen 5" below costal margin.
Urine,-trace of albumen present. W.R.negative
Confinement,-spontaneous.- still-born macerated hydrocephalic foetus.

(B). ANENCEPHALUS.

One case only occurred in a Tamil patient -a spontaneous birth.

(C). MENINGOCELE.

Two cases occurred,both in Tamil patients.

No.I. 2nd.P.(twin).. Urine,-nil. W.R.positive.
Confinement,- one twin normal,- 2nd. still-born and with meningocele.

No.2. 3rd.P. (2nd.still-born.) Urine,-nil. W.R.negative.
Confinement,- still-birth and meningocele.

(D). ASCITES.

There were no cases of this abnormality in the period under review, though I have met with the condition previously in the country.

(E). CLUB FOOT.

One case only ocurred in a Tamil baby, fortunately only to a very slight degree.

(F). TRANSPOSITION of VISCERA.

In the case of one still-born Tamil child where a post-mortem was permitted, an extensive diaphragmatic hernia of the abdominal contents was found.

(G). OTHER ABNORMALITIES.

One Tamil baby, the child of an hospital ayah, appeared to suffering from congenital heart disease shortly after birth. She eventually died when about 3 years old.

Abnormalities of the placenta and cord.

Infarcts, especially white infarcts were common and often associated with apparently smallish placenta in "anaemia of pregnancy" patients. Succunturiate, circumvallate, and one case of cyst of placenta, and of battledore placenta were found.

The cord was frequently found round the neck of the child, sometimes two or three times, in one case causing premature separation of the placenta. In two other cases a markedly short cord was noted, (IO" and I2" respectively), one accounting for a premature still-birth, and the other for a still-birth following accidental haemorrhage.

4. TOXAEMIAS of PREGNANCY.

(A). PERNICIOUS VOMITING of PREGNANCY.

No case of this toxaemia occured either among the in-patients or the out-patients. In fact after 8 years in Malaya, I have yet to meet one there. It appears pre-eminently to be a disease of civilisation and of an altered outlook towards marriage and child-bearing. The Asiatic woman is

brought up from earliest days to look forward to marriage and children as productive of the greatest amount of happiness for her in life, and is usually married off as soon as puberty is reached before beginning to have any doubts on the question! Even those few who elect to take up jobs such as nursing, teaching, tailoring etc., do so with one end only in view, namely to collect a dowry, and as soon as this aim is reached they marry, giving up their jobs if necessary, without compunction or regret. There is therefore a constant wastage in the nursing profession and it is almost impossible to ever hope to attain anything approaching a European standard in hospital management.

Curiously enough, one patient exhibited all the the signs and symptoms of pernicious vomiting of pregnancy without the pregnancy! She was a typical neurotic patient who in my opinion most certainly would have died if one had not been lucky enough to strike the right chord! - in this case a 70 mile car drive to Kuala Lumpur for an X-ray examination. the X-ray room to her being on a par with the chamber of horrors. It was an amazing and slightly humiliating moment to see her calmly drinking a large glass of barium milk after five days of intractable vomiting, during which not even water or ice could be retained, typical "coffee ground" vomiting superveneing during the last two days, and mucous colitis effectually preventing rectal feeding. Anything in the form of "needles" being injected for intravenous or ~~intra~~ subcutaneous medication was firmly refused, and as she was a "royal" patient , treatment was even more difficult! She lost weight visibly daily, and her pulse rose to a steady 160 the day before the X-ray. One noteworthy sequela with her was the development of glycosuria about two months after the illness.

Apart from this one patient however, generally speaking "nerves" are uncommon among the Asiatic women, and the ordinary vomiting of pregnancy gives them little concern. I have also not yet met a case of acute yellow atrophy.

The picture of the other toxaemias associated with albuminuria is however different. It was difficult to try

(B).ALBUMINURIA

and differentiate the various types owing to lack of proper diagnostic equipment. As already stated, the past four years have been very difficult financial years for Malaya,and one had to be content with the minimum necessary to carry on. Having had to do without a sphygnomanometer for two and a half years out of four,one almost reached the stage of being able to do without one! However the arrival of a brand new one in I934 as well as a ureometer should stimulate further research.

Table IO (vide below) reveals the occurence of albuminuria,-chronic nephritis being diagnosed by the failure of the urine to become clear within a short period of the confinement,by the presence of casts constantly or in large numbers,and by a bad obstetrical history not associated with syphilis or anaemia of pregnancy.In a few cases this was confirmed by an accompanying high blood pressure. My impression was that those on the higher carbohydrate diet tended to fall under the category rather of "low reserve kidney"(and the frequent occurence of albuminuria with marked anaemia is noteworthy), while true nephritis and pre-eclamptic toxaemia were found oftener among those on the higher protein diet as evidenced by the Hb. index.

Table IO

No.= number of cases; P. = primipara; M. = multipara; A.N. = no. who received ante-natal treatment for more than a week before delivery; Hb. = Hb. index of mother(average); Ch.N. = chronic nephritis; B.O.H. = a bad obstetrical history; H. = ante-partum haemorrhage; W.R. = a positive Wassermann reaction; Ma.a. = acute malaria; Ma.c. = chronic malaria; P.P. =puerperal pyrexia; M.A. = mother alive on discharge; M.D. = mother died; Misc. = miscarriage; P.B. = premature birth; P.S.B. = premature still-birth; S.B.s= full - time still- birth spontaneous; S.B.I = full-time still-birth with interference; N. = normal deliver N.N.D. = neo-natal death; Al. = baby alive and well one to thre years after discharge; N.T. = baby not traced; B.D. = baby died after discharge; Wt. = average weight of infant at birth; ASp.

Asp. = baby born asphyxiated; M. & D. = malpresentations and deformities.

Nat.	No.	P.	M.	A.N.	Ch.N.	B.O.H.	H.	W.R.	Ma.a	Ma.c
		b								
Malay.	4	-	4	I	I	I	-	I	-	-
Chin.	23	I3	I0	5	2	I	2	3	I	-
Tamil	39	I5	24	27	4	7	-	4	6	6
Other	I	I	-	I	I	-	-	-	-	-

Nat.	P.P.	M.A.	M.D.	Misc.	P.B.	P.S.B.	S.B.s.	S.B.I.
Malay	I	4	-	-	3	-	nil	I
Chin.	3	23	-	-	2½(½= twin)		2½	2
Tamil	5	27	I0	5	9	3	I	-
Other	-	I	-	I	-	-	-	-

Nat.	N.N.D.	N.	Al.	N.T.	B.D.	Asp.	M& D.	Wt.	H.B.
Malay	I	-	2	I	-	I	I	3Ibs.8.	36%
Chin.	I	15½ (1A.N.)	11	5	-	3	2	5" 15.	54%
Tamil	I	20 (7A.A.)	9	8	2	2	9 (5 convert.)	4" 12.	43%
Other	-	-	-	-	-	-	-	-	55%.

Gross Foetal Mortality.

Malay. I out of 4 = 25%

Chinese 5½ " " 22 = 25%

Tamil 6 " " 27 = 22%

These percentages appear to be rather similar for all three nationalities.

Maternal Mortality.

Malay. Nil.

Chinese. "

Tamil. 10 out of 32. = 31%. These were all due to Anaemia of pregnancy, three dying undelivered.

Treatment of Albuminuria of Pregnancy.

This followed the usual lines in the "low reserve"patients, but actual chronic nephritis with much oedema appeared to do better on the "dry diet" regime,combined with ammonium chloride grs. 120 per day. All patients whose Hb. index was less than 50% received in addition to the iron diuretic mixture, one oz. of marmite t.d.s.

The treatment of anaemia of pregnancy,as to whether it is better to induce labour or to leave Nature to attempt to effect a cure, is still undecided. The following notes are on such cases associated with albuminuria. The question will be discussed again under anaemia of pregnancy.

Nat.	Hb.adm.	Hb. conf.	Induction.	Spon.birth.	remarks.
Tamil.	45%	30%	Med. & surg.	_	Mother died Underlivered.
"	10%	?15%	_	Prem.3 lbs.	Mother died. Child died 24/365
"	25%	45%	_	" 4/4 ?	Mother -fever 2/52. Child died 4/12
"	45%	35%	_	Breech5/6" (stillborn)	Mother died.
"	35%	45%	_	Prem.4/- "	Puer. normal. Child alivel yr
"	35%	35%	_	Stillborn (macerated) 4/8 lbs.	Mother died.
"	25%	40%	_	Normal5/14"	Puer.normal. Child died 4/12
"	35%	35%	_	" 6/ "	Mother-slight fever 4 days. Child alive 3/12
"	40%	40%	_	_	Died underlivered.
"	30%	30%	Membranes punctured. (misc. twins)	_	Mother died.
Chinese.	35%	35%	_	Normal 5/12	Puer. normal Child alive 2 yr
"	35%	5o%	_	Prem.3/6 "	Puer.normal. Child died 3 hrs
Tamil	20%	20%	_	Misc.	Mother died.
"	35%	35%	Med. induction	Prem. stillborn	Mother died.

Malay.	35%	35%	_	Prem. 4/ lbs.	Puer.normal Child not traced after discharge.
Tamil	30%	30%	_	" 3/10 "	Mother died sepsis. Child not traced.
Malay.	10%	10%	Med. induc. Prem. 2/4 lbs.	_	Puer.normal Child died 3dys

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Among this lot both the maternal and foetal mortality appears to be equally bad whether induction is done or not!

Induction of labour otherwise did not appear to be necessary except where the pelvis seemed to be relatively or actually contracted.

(C). OCCULT NEPHRITIS.

There were five other patients who developed oedema, but without albumen in the urine, shortly before delivery The Hb. index ranged from 45% to 60%. Two births were normal, one premature, and one a premature stillbirth(also associated with S.T.malaria).The fifth,a Chinese,left the hospital after two unsuccessful attempts at medical induction.

(D). ECLAMPSIA.

There were two cases only , both Tamil patients.

Case 1.

Primip. , no ante-natal treatment, 2 intra-partum fits. Forceps were applied and a living child delivered. Puerperium normal. Child died at 6/12. Mother's W.R. positive.

Case 2.

Primip. - 9 days in hospital previously. B.P.found to be 165 systolic. 4 post-partum fits the day after delivery. puerperium normal. Child alive 3 years later.

Not only has eclampsia to be diagnosed from uraemia, but also in tropical countries from cerebral malaria. This is often an extremely difficult proposition when the patient has already been taking quinine,(thus preventing the discovery of parasites in the blood),and the high fever is

associated with albumen in the urine, or alternatively, a very slight rise of temperature,(and sometimes none at all) with a chronic nephritis complicating malaria! Even the welcome sphygmomanometer may not aid the diagnosis as fits and coma tend to be associated with a rise in blood pressure anyway. As in this case "one man's meat is another man's poison" one has to walk very warily.

4.CONTRACTED PELVIS.

The recent articles of Bourne in the British Medical Journal on the question of pelvimetry in pregnancy were rather encouraging,as I had rather eschewed pelvimetry with a somewhat guilty conscience for many years! But to spend time in a temperature of 90 degrees,perspiration pouring from every pore,taking elaborate and often inaccurate measurements,seemed futile,when one could get all the information required by doing a vaginal examination while in the process anyway of examining the cervix weekly to supervise treatment. I can therefore give no details re the average Asiatic pelvis,-notes being limited to "sacral promontory felt" or "not felt", or "felt easily"; "outlet appears contracted" or "no apparent contraction" etc. etc. as the case might be. The results after adopting this method have rather justified it.

I would repeat that Caeserean section has little or no place meanwhile in the district as a usual line of treatment in preference to induction of labour. To tell an Asiatic patient in this district that she might require a "cutting" operation done usually meant that one never saw her again. But to tell a pregnant patient that by giving her some medicine, she might have the baby born earlier,and have an easier delivery, and,most important of all,that by so doing she might spend a much shorter time in hospital,-was productive of much better results! The loss of a first or even second child did not really disconcert them over much as long as they themselves got better,and having found the doctor's prognosis correct twice,then they might consider the more serious operation.

Medical induction (or surgical,if medical failed) was done ,-with the patient's permission, as soon as there appeared to be any difficulty in pushing the head into the brim by Munro Kerr's method, whether due to contracted pelvis or post-maturity. Herewith appended (table 11) are notes on such cases. Medical induction was carried put for three successive nights,if necessary, followed by a rest for two nights, and then repeated again for three nights. It was noted that several patients earmarked as being possible cases of contracted pelvis had a normal delivery without induction, and at least two in the past seven years had a normal delivery following a previous Caeserean section. These belonged to the more educated class of patient who were more amenable to the idea of operation. I would repeat here the average normal weights as quoted on page 8.

Malay child.(at birth).----	6 lbs.	3 ozs.	
Chinese " " ----	6 "	13 "	
Tamil " " ----	6 "	1 "	
Bengali " " ----	6 "	7 "	

Table 11.

The contractions are as in table 10. M.I.& S.I.- medical and surgical inducti

Tamil.	P.-W.R.positive,-		M.I.(1).	Wt.6/ lbs.	N.-	P.P.nil.	Ch. Al.
"	M.-B.O.H.-	M.&.D.-(?C.P.)	M.I.(6).	" 4/3 "	.- N.-	P.P.	" Ch.Al
"	M.- ?C.P.	_	_	" 6/ "	- N.	P.P.	" "
"	M.	M.&.D.	M.I.(I).	" 6/6 "	- N.-	P.P.	" "
"	M.(Ist.abor.)	?C.P.	M.I.(2).	" 4/2 "	-D.I.	P.P.5dys.	N.N D.
"	P.	M.&.D.	M.I.(5).	" 6/2 "	N.	P.P.nil.-	N.T
Chinese	M.		M.I.(2).	" 6/8 "	N.-	P.P.pyelitis	Al.
Tamil.	M.(Chr.arthritis)		M.I.(I).	" 6/ "	N.-	P.P.nil.	Al.
Malay.	M.		M.I.(I).	" 5/6 "	N.-	P.P.	" "
Tamil.	M.- B.O.H.		M.I.(4).	" 5/9 "	N.-	P.P.	" "
"	P.		M.I.(I).	" 5/8 "	N.-	P.P.	" "
Chinese.	P.	?C.P.	_	" 7/ "	N.-	P.P.	" "
"	M.- B.O.H.(3 S.B.) forceps.		M.I.(I).	"6/2 "	N.-	P.P.	" "

Tamil.	M.-B.O.H. W.R.pos.	M.I.(I).	Wt.5/8 lbs.	N. P.P.4dys.	Al
Malay.	M.- " "	M.I.(3).	" 7/10 "	N. P.P.nil.	N.N.D.
Tamil	P. ?C.P.	M.I.(I).	" 4/6 "	N.-P.P. "	Al.
"	P. " Hb.35%	_	" 4/ "	N.-P.P.3dys	N.N.D.
Chinese	M.-B.O.H. ?C.P.	M.I.(4).	" 5/14 "	D.I. P.P.nil.	Al.
Tamil.	M.-	M.I.(I).	" 5/12 "	N. P.P. "	"
Malay.	M.	M.I.(I).	" 6/12 "	N.-P.P. "	"
Chinese	M.- B.O.H. ?C.P.	_	" 6/2 "	N.- P.P. "	"
Tamil.	M.- B.O.H. (pendulous abd.)	_	" 8/ "	N.- P.P. "	"
"	M.- B.O.H.	M.I.(2).	" 5/8 "	N.- P.P. "	"
"	M.-	M.I.(4).	" 4/8 "	N.- P.P. "	N.T.
"	M.- B.O.H.	M.I.(3).	" 5/4 "	N.- P.P. "	Al.
"	M.	M.I.(4).	" 7/12 "	N.- P.P. "	"$\frac{1}{12}$.
"	M. B.O.H. W.R.pos.	M.I.(2).	" 6/ "	N.-P.P. "	"$\frac{6}{12}$
Malay	M.-B.O.H. " ?C.P.	M.I.(2)	"7/6 "	N.-P.P. "	N.N.D.
Tamil	P. W.R.pos.	M.I.(I).	" 5/4 "	N. P.P.?malaria	(died) N.T.
Chinese.	P.	M.I.(2).	" 6/4 "	N.-P.P.nil.	Al.
Malay.	M.	M.I.(I).	" 6/8 "	N.-P.P. "	"
Tamil.	M.- B.O.H.-Breech c.extended legs.Ma.a.	M.I.(I).	" 4/8 "	S.B.P.P. "	_
"	P.	M.I.(2).	" 6/2 "	N.-P.P. "	Al.
Malay.	M. B.O.H.-W.R.pos. ?C.P.	_	" 4/12 "	N. P.P. "	N.N.D
Tamil	M.-B.O.H. Ma.a. ?C.P.	_	" 5/8 "	N.-P.P. "	Al.
"	M.-B.O.H. W.R.pos. M.&.D.	M.I.(I).	" 6/2 "	N.-P.P. "	"
"	M.- " Ma.a.-?C.P.	M.I.(3) & S.I.	" 6/2 "	N.-P.P. "	"$\frac{6}{12}$
"	P. ?C.P.	M.I.(5) & S.I.	"4/4 "	N.-P.P. "	Al
Chinese.	M.- B.O.H. W.R.pos. ?C.P.	M.I.(I).	" 7/2 "	N.-P.P. "	"
Malay.	M.	M.I.(I).	" 7/ "	N.-P.P. "	"
Tamil.	M. W.R.pos.	M.I.(I).	" 4/2 "	N.-P.P.2dys	"

Tamil.	M.	W.R.pos.	M.I.(I).	Wt.6/ lbs.	N.-P.P.nil Al.
"	M.-	B.O.H. W.R.pos.	M.I.(I).	" 7/ "	N.-P.P. " N.T.
"	M.	" "	M.I.(I).	" 5/14 "	N.-P.P. " Al 10/12
"	M.	"	M.I.(I).	" 5/2 "	N.-P.P. " "7 I2
"	M.		M.I.(I).	" 6/12 "	N.-P.P. died Ma.a. N.T.
"	P.		M.I.(I).	" 5/4 "	N. IxBxP.P.nil.Al. 5/12
"	P.		M.I.(2).	" 7/12 "	I.D.-P.P. " N.T (paralysis & fits)
"	M.(Ist.abor)		M.I.(I).	" 5/14 "	N.-P.P.nil. N.T
"	P.	W.R.pos.	M.I.(2).	" ?	N.-P.P.4dys. N.N.D.
"	M.	alb.present. Ma.a.	M.I.(3).	" 7/14 "	N.-P.P.17dys. Al.
Chinese	M.		M.I.(I).	" 6/12 "	N.-P.P.nil.Al.
Tamil.	M.	B.O.H..-Ma.a.	M.I.(5).	" 7/4 "	N. P.P. " "
"	P.-	?C.P. Alb.present HE.35%.	M.I.(4). & S.I.	" 3/10 "	N.-P.P.3dys. Al.5/12.
"	P.	?C.P.	M.I.(3).	" 4/4 "	N.- P.P.nil.Al. (much moulding)
"	M.-	B.O.H.	M.I.(I).	" 6/4 "	N.- P.P.nil.Al.
"	M.+	M.&.D.	M.I.(5). & S.I.	" 7/8 "	I.D.-P.P. " "
"	M.(Ist,abor,+	W.R.pos.	M.I.(2).	"5/14 "	N. P.P. " "

Thus out of 59 patients there were only 6 neo-natal deaths, 4 being associated with a positive W.R.,one with anaemia, and one with an instrumental delivery.That one did not err too much on the safe side was shewn by the fact that 4 patients had to be further assisted by forceps. Induction of labour has proved to be one of the most useful prophylactic measures so far in this district. One patient in the last year,after two previous stillborn forceps deliveries asked for a section !

5. MALPRESENTATIONS. These ocurred as follows;-

Table 12.

	T.	CH.	M.	O.
BREECH-converted to vertex.	20	_	2	1

	T.	CH.	M.	Ot.
BREECH- UNCONVERTED.	6.	8.	2.	-
FACE.	1.	1.	-	-
TRANSVERSE.	2.	1.	3.	-
Persistent OCCIP. POST.	1.	1.	nil.	-
HAND with HEAD.	4.	4.	-	-
PROLAPSED CORD.	2. (also breech)	1.	1.	-
Total.	36.	16.	8.	2.

A.N.- received ante-natal treatment for more than one week before delivery; P.- primipara; M.- multipara; B.O.H.- bad obstetrical history; An. - Hb. index below 45% ; Ma.a. - malaria, acute; Ma.c. - malaria, chronic; W.R.- a positive wassermann reaction; N.- normal delivery (P.- premature) N.N.D. - neo-natal death; S.B. - still birth; Al. - alive at 6 months to three years; M.D. - mother died; M.w.- puerperium normal; P.P. - puerperal pyrexia. N.T.- child not traced

Nat.	A.N.	P.	M.	B.O.H.	An.	Ma.a.	Ma.c.	W.R.	N.	N.N.D.
Tamil. (34)	30.	8.	26.	14.	1.	9.	5.	14.	30 (7P)	1.
Chin. (16)	-	8.	8.	5.	1.	-	-	4	10	1.
Malay. (8)	2 (not delivered)	1.	7.	3.	1.	-	1.	3.	2 (1P)	-
Other. (2)	1.	1.	1.	-	1.	-	-	-	1.	-

Nat.	S.B.	Al.	M.D.	M.W.	P.P.	N.T.	Remarks.
Tamil.	5.(1P)	19.	-	32.	2.	8(1 died 8/12)	Alb-5.
Chin.	6 (1 P)	6	1.	12	3.	3.	
Other.	-	1.	1.(underdelivered.)				

The important points about these figures may briefly be summarised;-

1. Out of 22 Tamil patients who received ante-natal care, and in whom a breech or transverse presentation was discovered, and version performed about the 36th. week, there were no foetal or maternal deaths, and only one neo-natal death , (associated with albuminuria. contracted pelvis and surgical induction.) Yet nine of these patients had had a very bad previous obstetrical record! 15 babies were still alive in October 1934 at ages varying from 6 months to three years, and the remaining six could not be traced.

2. In the six unconverted breech presentations, four had been under ante-natal care, but attempts at external version were unsuccessful, mainly due to extended legs, and in one case to fibroids. There were 4 stillbirths among the six, one associated with albuminuria, one with "occult nephritis", one with a positive maternal W.R., and active malaria, and the fourth with active malaria. In fact 5 out of 6 in this group had malaria! and two had a prolapsed cord. There were no maternal casualities.

3. In the Chinese group of 7 unconverted breech presentations (all admitted in labour), there were three stillbirths, one associated with a bad obstetrical history, one with a positive maternal W.R. The third was a primiparain whom no foetal heart was present on admission. Three out of this group were primipara.

4. A hand presenting with the head did not appear to have any ill effects beyond delayed labour.

5. The three maternal deaths were;-

(i). Bengali,-- died undelivered from anaemia of pregnancy (breech converted to vertex)

(ii). Chinese,-- died from rupture of the uterus following prolonged labour associated with a face presentation, and a large child.(10 lbs.) A "fault in judgment".

(iii). Malay.-- died from ? rupture of uterus and large

tear into bladder before admission, and the whole of the cervix torn away by the local bidans ! She was almost moribund on admission.

The Malays and Chinese were often admitted only after being several days in labour.

Occipito-posterior presentations in my opinion rarely cause much trouble beyond delayed labour, and interference is not indicated unless made compulsory by the state of mother or child.

Among Asiatics,therefore , as seen by the above figures, ante-natal care produces equally good results in the treatment of malpresentations as in Western countries.Treatment other than prophylactic followed the usual lines;-

1.VERSION. This was done in 5 out of the 6 cases of transverse presentation,- the sixth being one of those rare cases who converted herself to a breech before one's eyes by the aid of strong labour pains,while preparations for treatment were being made.(normal living child delivered). Of the 5 versions, 2 resulted in living children and three in stillborn, none of the foetal hearts of these three being heard on admission. Two of the children born alive were still living in Oct. 1934,while the other could not be traced

2. CRANIOTOMY. This was done on the after-coming head in the case of one Malay patient who was admitted after being in labour for three days, There was no foetal heart on admission.

3. FORCEPS. A quick forceps delivery in the case of one patient with a prolapsed cord which was still pulsating resulted in a living child,still alive at 2 years old. In the other three cases of this abnormality,one was a miscarriage, and the other two cords had ceased to pulsate. One of the

persistent occipito-posterior presentations was also delivered by forceps, the head rotating nicely to the anterior position.

6.HEAMORRHAGES of PREGNANCY.

Among this record of 808 patients there were ten cases of ante-partum haemorrhage, sufficiently severe to bring the patient to hospital. Usually haemorrhage to the Asiatic patient is associated with miscarriage or premature birth,and therefore not to be regarded seriously ! In all the above ten patients,the placenta was examined carefully to confirm or otherwise the suspected diagnosis. Short notes on these cases are appended.

(A). PLACENTA PRAEVIA.

Case 1. Chinese. - wife of shopkeeper.- age 29,-5th. pregnancy 4 living children. Hb. on admission- 45%. Albumen-nil W.R. neg. No F.H. on admission. This was a case of central placenta praevia for which a time honoured version was done. There was a mild degree of pyrexia for the first seven days.

Case 2. Tamil- cooly. - had ante-natal care. Age 30,-3rd preg. 1st. child died 1/12, 2nd. living 2yrs. old. Hb.40% on admission, and 60% at confinement. Spleen 1" below costal margin. Albumen-nil, W.R. neg. A lateral placenta praevia was diagnosed,and the membranes ruptured when pains began. A living child 7/10 lbs. was delivered, still alive 2 years after. Puerperium normal.

Case 3. Tamil- cooly.- Under ante-natal care for 33 days. Age 30 - 9th. pregnancy. First 7 children died from 5 to 10 years,and 8th. at 7/12. Hb. 45% on admission 55% at confinement. S.T.malaria on admission,-spleen 3" below costal margin. W.R.& K. positive. Anti-syphilitic treatment given for 10 weeks before birth of child.(as O.P.) History of slight bleeding every month. Lateral placenta praevia diagnosed. Membranes ruptured,and living child delivered(5/4 lbs.) Not traced in Oct.1934.

Case 4. Chinese,-hawker. -no ante-natal care. Age 25,- 2nd.preg 1st. child living. Hb. 60%. Urine-neg. W.R.neg. Lateral placenta praevia.- membranes ruptured and living child delivered.(7/8 lbs.).

Case 5. Malay,- age 30. - 2nd. preg.-1st.living. Urine neg.- W.R.neg. Lateral placenta praevia diagnosed and membranes ruptured.A premature child 3/8 lbs. was delivered who died in 3 days. Puerperium normal .

Case 6. Chinese,-wife of shopkeeper,- age 28.-9th. preg.-8 children living. Urine-neg. W.R. neg. Three haemorrhages before admission and one after. Marginal placenta praevia diagnosed and membranes punctured.A living child 8/ lbs delivered but the mother died of post-partum haemorrhage.

The incidence of placenta praevia appeared to be about 1 in 120 hospital cases. The three types were differentiated by their position when the os was about two fingers dilated,- the central type covering the os. the marginal overlapping it, and the lateral coming to the edge. I may mention that owing to the apparent decreased liability to sepsis among the Asiatic races, Packing of the vagina did not appear to be such a dangerous procedure as in European countries. In all cases except one (and the one who died), the puerperium was entirely free from pyrexia. With the former patient there was a very slight intermittent temperature for six days.

(B). ACCIDENTAL HAEMORRHAGE.

Case 1. Tamil,-cooly.-age 27- 5th.preg. Obstetrical history bad. 1st. child died 3/12, 2nd. 21/12, 3rd. 3/365., 4th. stillborn. W.R.& K. strongly positive. Course of anti-syphilitic treatment given. Urine-neg. Hb.35% Result- stillbirth. Treatment- palliative,morphia etc. Wsa the haemorrhage due to the syphilis ortreatment,or the stillbirth to morphia? Post-mortem refused.

Case 2. Chinese,-cooly. Age 21,-2nd.preg.-1st.child living.

Urine-albumen present. W.R.neg.Hb.50%.- Admitted with intermittent pains for three days. No F.H. on admission. Medical induction given. Stillborn macerated child born. Cord found to be short,and large retro-placental clot present. - ? early premature separation of placenta after pains began. No ante-natal care.

Case 3. Tamil, cooly,-age 20,- 1st.preg.-about 6/12. Urine,neg. W.R. Neg. -Hb. 40%. - Admitted with severe ante-natal haemorrhage. Result- miscarriage 2/ lbs. Cord 6". - No ante-natal care.

Case 4. Chinese, cooly.- age 23,- 1st.preg. Severe ante-partum and post-partum haemorrhage. Urine- albumen present. W.R.- neg. Result- living child 5/12 lbs. Short cord 12". -not able to trace child in Oct.1934.

Three out of these four cases appeared to be associated with premature separation of the placenta due to too short a cord. In two, albuminuria was present. The incidence among hospital patients, one in 136, appeared about normal, but no cases of severe concealed haemorrhage were seen.

OTHER DISEASES COMPLICATING PREGNANCY.

(A). ACUTE RESPIRATORY DISEASES.

According to tables 4 and 7 respiratory disease was responsible for 6 cases of premature birth and two of miscarriage. Acute Bronchitis was the main cause of all the premature births and of one of the abortions,while Influenza appeared to be the principal factor in the second abortion, though albuminuria, syphilis and anaemia were found combined with the bronchitis. Influenza is endemic in the Kuala Pilah district,and it has been suggested that it is connected with a pollen season, and therefore on a par with hay fever. Acute bronchitis was also found as a complication in six other patients who later gave birth to fulltime normal children, and Lobar Pneumonia intwo patients. Asthma complicated the life

of one ante-natal woman.and influenza yet another,but without affecting the baby.

(B). TROPICAL TYPHUS etc.

This complicated the pregnancies of two Chinese patients,without a casualty for mother or child. PARATYPHOID FEVER was found in one Malay patient,who produced a living child(5/ lbs.),which however died when one month old.

(C). FIBROIDS of UTERUS.

To this condition has been ascribed two miscarriages(table 7), and also one unconverted breech presentation.(page 33). It was found also associated with another abortion and a premature birth,but not as the primary factor, and with one normal delivery. Of the six patients in whom this abnormality was found, five were Tamils,and one Chinese. As it was not associated with pain,to suggest operation was wasted effort.

One case each of DENGUE, EPILEPSY, and CARDIAC DISEASE were found, all surviving the pregnancy,and giving birth to normal children. The patient with epilepsy,died about a year later from "status epilepticus".

(D). GLYCOSURIA.

One case of true diabetes was found in a pregnant Islam patient. The confinement and puerperium were normal, Sugar in the urine was a rare occurrence,but the reagents and the technique are not above suspicion. One other patient(Chinese) admitted with "white leg" was discovered to have glycosuria.

MALARIA IN PREGNANCY and the PUERPERIUM.

Malaria has been found to play such a large part in the causation of maternal and foetal mortality,that I think it is due to be discussed at this point. 96 patients were found to have active malaria while in hospital, and another 109 had enlarged spleens, a total of 205 out of 808, almost one out of every four! One redeeming feature is the marked decrease in 1934,due,in my opinion to the replacement of quinine as a cure by atebrin and plasmoquine.

Year.	Active malaria,	Enlarged spleen.	Tota

Year.	Active Malaria(parasites found) and percentage to total maternity cases.		Spleen rate
1931.	Tamil. 22.	15%	35%
	Chinese. 1	1.5%.	—
	Malay. 2.	17%	10% (2cases)
1932.	Tamil. 27.	20%.	34%.
	Chinese. 2.	4%.	2%.
	Malay. —	—	25%.
1933.	Tamil. 28.	31%	35%.
	Chinese. 5.	11%.	7%.
	Malay. 1.	4.5%.	27%
1934.(Oct.)	Tamil. 4.	6%.	28%.
	Chinese. 3.	7%.	5%.
	Malay. 1.	9%.	54%.

This brings into prominence the facts;-

1. That the estates(from which the Tamils come) are heavily infected, in spite of extensive anti-malarial measures,- due probably to the large amount of jungle cleared during the past 10 to 15 years. The outbreak in Ceylon at present is another such example.

2. That the kampongs in this district(from which the Malay population are derived) are also heavily infected. Anti-malarial measures in the kampongs are,unfortunately,more conspicuous by their absence than their presence,and the oiling or otherwise of padi fields remains a bone of contention between the health staff and the rural population. All agree, however,that something must be done to combat the heavy toll taken by malaria among these kampong dwellers,and only financial stringency has prevented many measures suggested being put into operation. As an example of the attitude of mind of the kampongs to such matters,one Malay schoolboy,writing an essay on the benefits of the rural life,is stated to have given as

the chief point that"they are not within the limits of a Sanitary Board area! " Education im the use of a mosquito net,and other propaganda in the realm of moral suasion is slow to permeate, but atebrin appears to have such a Marvellously prolonged curative effect,that in time it may supersede all other methods as a prophylactic measure.

3. That the Sanitary Board area within which the Chinese mainly dwell who make use of the hospital, is comparatively very slightly infected.

In the published records of the Registrar-General for the Federated Malay States,1931 to 1933, Kuala Pilah district has the unenviable record of having by far the highest death rate from malaria among the Indian estate population,and the total estate population,(though halfway down the list in deaths "total diseases") in the whole of the Federated states. Therefore any figures given here are not representative of Malaya as a whole. In tables 4,5,&,7, it has already been stated that malaria was the primary factor in the production of;-

1. 21% of all premature births.
2. 17% " " " stillbirths.
3. 8% " " still births(full-time).
4. 22% " " neo-natal deaths.
5. 18%" " miscarriages.

It was also found associated in an acute or chronic form(as evidenced by an enlarged spleen)with;-

1. A further 24% of all premature births.
2. " " 24% " " " stillbirths.
3. " " 19% " " fulltime " "
4. " " 39% " " neo-natal deaths.
5. " " 22% " " miscarriages.

But it is in the realm of maternal mortality that the ravages of this disease are seen at their worst ! Malaria in the puerperium in this district is a thing to be dreaded,and the onset and course of cerebral malaria is

as dramatic as that of acute fulminating septicaemia in Western countries. All forms of treatment appeared equally to be unavailing, including intravenous medication with quinine, urotropine, salines etc., lumbar puncture, venesection etc. Four of the fatal cases in the maternity ward early in 1932 followed the death of a patient in the labour ward adjoining, who, on admission in an almost moribund state 9 to ten days previously, was found to have almost every corpuscle invaded. The symptoms were very acute, coma supervening early, and death occurring often within 48 hours from the onset of the attack. Two of the patients had been notified as fit for discharge! The virulence of the parasite seemed to be high in this district.

As stated on p.p.27 and 28, the diagnosis was often extremely difficult, especially when a mild sapraemia was added to the picture. Post-mortems on maternity patients were pratically always refused. I may say that Mayer's test for quinine in the urine was done as a routine on all patients for whom quinine had been prescribed. Quinine is pratically always given in combination with ergot for the first three or four days of the puerperium to try to prevent this much dreaded complication, a custom which makes the finding of the parasite even more difficult. Thick blood films are now used in such cases

Maternal Mortality.

17 out of the total 60 maternal deaths for the period were due to malaria, this being 28% of the total deaths, and 17% of the total number with parasites present in the blood while in hospital. Only 5 out of the 17 had received ante-natal care.

The hospital grounds unfortunately, have never been quite free from the anopheline mosquito, but the labour room was mosquito proofed in 1933, and plans for subsoil drainage of ravines in the neighbourhood have been put forward for this year's estimates by the Health officer. I now give a

prophylactic course of atebrin and plasmoquine to all patients with enlarged spleens, and in 1934, till October, there were no maternal deaths from malaria, though it must be remembered that the incidence is decreased to about one quarter of previous years.

ANAEMIA OF PREGNANCY.

Anaemia of pregnancy is now generally recognised as a deficiency disease, though whether it can be classed as a toxaemia is still under question. It has been studied and discussed in detail by workers in India and elsewhere, including my predecessors at Kuala Pilah, Drs. (Mrs.) Corke and Bush. Owing to retrenchment of the labour force on the estates and in Government employment, - the less economical being repatriated, - the condition is not found at present nearly to the same extent in Malaya as before the period under review.

Usually superadded to this "macrocytic" type of anaemia is the anaemia associated with other conditions, - Worms, (both ascariasis and anklostomiasis), acute and chronic malaria, and syphilis are the outstanding examples, and more rarely, chronic nephritis. It has been proved, that, in normal pregnancy, the protein metabolism is upset anyway during the first half of pregnancy, the child apparently "living" on the mother to a much greater extent than during the second half when a gain in protein reserve occurs. In "anaemia of pregnancy associated with generations of protein underfeeding, where "compensation" is already stretched to its uttermost, any further strain such as is experienced during the first half of pregnancy tends to result in a breakdown of this compensation, and either the mother or child, or both die. It was noted in the less serious type of patient that if they do reach the seventh month of pregnancy, the survival rate was greater.

In contrast to figures on maternal malnutrition in European countries (Child Life Investigation-Bruce Murray), babies born of these anaemic patients are usually underweight,

and "Nature's care for the race or species" appears to be superseded by a kindlier effort in many cases, resulting in the deathn of the foetus. In tables 4,6,& 7. anaemia of pregnancy was shewn to be the primary factor in 20% of all premature births, in 39% of all premature stillbirths, and in 22% of all miscarriages among the Tamils admitted to hospital. Out of 131 Tamils, 14 Chinese and 14 Malays with a Hb. index of 40% or less;-

T. 70 resulted in miscarriage, premature birth, premature stillbirth, or stillbirth, = 54%. (all spontaneous birth).

CH. 4 ended as above, = 28%.

M. 7 " " " = 50%

All patients who registered a Hb. index of 40% or less were placed provisionally in the category of " anaemia of pregnancy". There were cases of recovery in patients whose Hb. index reached 10%, though generally the figures for maternal mortality in this condition make depressing reading.

Table 13.

Group(i). Hb. index 20% or less.at any time in hospital.

Nat.	No.	Aver. Hb. on admission.	Misc. or S.B.	Aver, Hb. at confinement.	Prem. birth	Aver. weight of child at birth (exc. misc.)
T.	18 cases.	16%	7.	19%	3.	4/1 lbs.
CH.	-					
M.	3 "	10%	1. (triplets)	10%	1.	-

Group (ii). Hb. index 20% to 35%.

T.	41 cases.	30%	10.	32%.	15.	4/9 "
CH.	1 "	30%	-	25%.	-	-
M.	1 "	30%.	-	30%	-	-

Group (iii). Hb. index 35% to 45% (those who never fell below 45% are not included.

T.	72 "	39%	14.	44%	21.	5/3 "
CH.	13. "	40%	3.	41%.	1	6/ "
M.	10. "	37%	3.	44%.	2.	5/15 "

The weight once again appeared to follow the Hb. index though there were exceptions to this in a few patients.

Associated malaria acute or chronic, was found in 63% of these anaemic Tamil patients, in 14% of Chinese, and in 43% of the Malays, and a positive W.R. in 21% of the Tamils, 36% Chinese, and 21% Malays. Both of the "Others" group had a positive W.R.

Maternal Mortality.

The maternal mortality in this disease was appalling and constituted one third of the total maternal (35%) deaths, (21 out of 60), and a mortality of 13% among these anaemic patients. All were Tamils except two Malays and one Bengali. Nine of the Tamil patients and the Bengali & one Malay died undelivered. There were 15 more "associated" deaths.

Group (i). 20% and under;- (Primary factor plus associated.)

31% total cases (of anaemia)

" (ii) 20% to 35%. " " "

33% total cases.

" (iii) 35% to 45%. " " "

11% total cases.

The actual cause among the eighteen in whom anaemia was the primary factor, appeared to be cardiac failure from acute anaemia in the patients who died undelivered, while "obstetric shock" could best describe the symptoms of those dying immediately after delivery, although registered as anaemia of pregnancy. Varying degrees of puerperal pyrexia were common, three of the associated deaths being from sepsis.

Treatment.

Expensive patent drugs unfortunately were not procurable under "slump" conditions, nor could the local supply of liver meet requirements ! A liberal diet, marmite, and massive doses of iron were the three standbys in this condition, while all accesory causes of anaemia were systematically treated. N.A.B. injections appeared to help in raising the general tone, as well as being useful where there

was a positive W.R. present. Courses of atebrin and plasmoquine helped in the malarial patients, while Ol.chenopodium in very small initial doses often worked wonders. It is interesting to note at this stage that it was estimated that the figures for "worm" infection among these pregnant patients reached the high average of 80% among the Tamils, 70% for the Chinese, and 81% for the Malays. The few "Others" had only a 25% infection.

Appended are a few typical diets ;-

Reg.no.899/31. Tamil cooly, primipara. Hb.50%on admission, and 75% on discharge.

Rice(curried),-- --twice daily.

Coffee and milk(about ½ pt.)---- once daily

Meat,------ twice weekly.

Fish-dried,---- nil

Fish-fresh,---- three or four times monthly(after pay day).

Chicken,----- twice weekly.

Eggs,---- " "

Labour normal, weight of baby,-- 5/ lbs.

Reg.no.1188/31. Tamil cooly, multipara(4th). Hb.30% on admission, 60% at confinement, and 40%atdeath

Ante-natal care forseven weeks.

Rice, coffee and milk as above.

Meat,----- three times monthly. (½ kati)

Chicken,--- twice " " "

Eggs,---- once(3) "

Fish,fresh,-- " " "

Labour normal, weight of baby,-- 5/4 lbs. Mother died from puerperal sepsis following removal of a very adherent placenta.

Blood picture before death;- Differential count not normal (Poly.63%). Polychromatophilia, neutrophil myelocytes, megalocytes, and transitionals present.

Reg.no.907/31. Tamil cooly, primipara, Hb. on admission 40%. at death ? 50%. Ante-natal care for two months.

Rice and coffee as above.

Chicken---- once weekly.

Meat,---- " " (½ kati).

Fish,fresh,---- " " "

" dried, --- twice "

Eggs(1), --- thrice weekly.

W.R. positive, spleen enlarged. Labour normal-premature birth(child still alive at 7/12).

Blood picture;- poikilocytosis,megalocytes,macrocytes, and megaloblasts. R.B.C.- 1,850,000 , W.B.C.- 4,500. Differential count normal.

Result,- Mother died immediately after birth of child.

Compare these with the daily average menu of a Chinese patient,cooly or otherwise.

Reg. no.1142/31. Chinese, shopkeeper. Multipara(8). - no ante-natal care. Hb. 65% on admission

Rice, coffee and milk, bread and butter twice daily.

Pork,---- 4 times weekly.(½kati each meal)

Meat other than pork,-- twice weekly (½ kati).

Fish,fresh,-- daily (1/3 kati)

Vegetables,fresh " ½ "

Chicken,---- thrice monthly.

Course of labour;- stillborn child 6/ lbs.

Mother's W.R. strongly positive.

1 lb. = 3/4 kati.

Knowing that cutting short the pregnancy is often the patient's only chance of survival,one is often in a quandary as to whether to try and terminate the pregnancy and run the risks of the patient dying undelivered,or being a victim of obstetric shock or puerperal sepsis.- or alternatively,leave her alone hoping that she will be one of the 54% aided by Nature. Of the 21 deaths among the 131 Tamils,we glean the following information;-

1. 7 deaths took place on the day of admission, 5 being undelivered.

2. Of the remaining 11, 5 had been assisted, two dying undelivered after medical and surgical induction, and two dying of obstetric shock after a forceps delivery. while a third died of shock after bringing on labour by puncturing the membranes, This leaves two others who died undelivered, one dying on the day after admission (Hb.10%), and one on the 8th.day.

3. There were therefore 3 deaths out of 10 "assisted" cases, (30% mortality) compared with 5 deaths out of 110, excluding those dying on the day of admission, viz.-a 4% mortality. All this rather points to a policy of "let well alone".

SYPHILIS AFFECTING PREGNANCY.

The relationship of syphilis and yaws in tropical countries is still very vague, some holding that they are two distinct and separate diseases, while others believe that they are closely related. But to label all the Malay patients with a positive W.R. as yaws, and the town and estate dwellers as syphilis, appears to be begging the question. especially as gonorrhoea is just as prevalent among the former, and also the "bad obstetrical history".

The whole question of syphilis in pregnancy, and the value of the Wasserrman reaction has been gone into by various observers including Cruikshank(Medical Research Council Report), who among 1881 unselected cases found a positive W.R. in 9% to 10%. Among 808 of my patients the incidence was as follows;-

Tamil.---	108 out of	722,----	15%.
Chinese.--	38 " "	207,----	18%.
Malay. ---	18 " "	65,----	28%.
Other. ---	1 " "	17,----	6%.

Average-all nationalities,---- 17%.

Although the percentage appears high for the Malays, it was noteworthy that 17 out of the 18 patients were multipara ! With the Chinese, 16 were primipara, and 22 multip. and the Tamils, 30 to 78. Owing to the early marriage age

syphilis is much more likely to appear among multipara than among primipara, and therefore in the case of the Malays, the positive W.R. that was associated was more probably due to syphilis than to yaws. Once again the Malays and Chinese shewed marked reluctance to come to the hospital for ante-natal treatment, and if they did attend as out-patients, usually had their normal deliv--eries at home, (the local bidans of course getting the credit!!). Whereever there was a bad obstetrical history without albuminuria N.A.B. injections were immediately commenced without waiting for results of the W.R.-either before or after delivery; and grey powder given to the child if alive from the day of birth, proved a powerful ally in the preventitive or curative treatment of congenital syphilis. I may mention here that the results of injection treatment were on the whole so good, that eventually those who had already 3 or 4 of a family (perhaps out of 10 !). refused the injections, regarding the disease as a natural form of birth control!

Table 14. (contractions as in table 10).

Nat.	W.R. (pos.)	N.	Misc.	S.B.	P.B.	N.N.D.	Al.	N.T.	Wt.	B.O.H.
Malay.	18.	11.	4.	2.	-	4.	7.	1.	6/5 lb.	5.
Chin.	38.	32.	2.	3.	1.	1.	27.	5.	6/10 "	9.
Tamil.	108.	72.	6.	12.	21.	6.	72.	14.	5/- "	39.
Others.	1.	-	1.	-	-	-	-	-	-	-

N.B. Figures for Tamils include twins. while figures for misc. S.B.etc etc. are higher than in tables 5,6,& 7. where syphilis is the primary factor only.

Group 1. No treatment given (as often primipara without obstetrical history to guide, and result of W.R. only after leaving hospital. Some of th Chinese were put on Grey powder later)

	N.& Al.	N.&.N.T.	N.&.D.	Misc.	S.B.& --N.N.D.	
Tamil.	9.(1P).	4.(1P).	1.	2.	13(1P)	29
Chinese.	8.	3.	-	2.	4.	17
Malay.	1.	1.	-	3.	2.	7
Other.	-	-	-	1.	-	1

Group ii. Grey powder given to child only (no ante-natal N.A.B) usually mother admd. in labour).

	Nat.	N.&.Al.	N.&.N.T.	N.&.D.	Misc.	S.B.&N.N.D.	
Tamil.	13(1P).	2.(P).	-	-	1.	16.	
Chinese.	17 "	2.	-	-	-	19.	
Malay.	5.	-	-	-	1.	6.	

Group iii. Ante-natal N.A.B. 1 to 4 injections only.

Tamil.	4.	1.	1.	1.	4.	11.
Chinese.	1.	-	-	-	-	1.
Malay.	-	-	-	1.	-	1.

Group iv. Ante-natal N.A.B. 1 to 4 and Grey powder.

Tamil.	15(2P).	2.	1.(P).	-	1.	19.
Chinese.			nil.			
Malay.	2.	-	-	-	-	2.

Group v. Ante-natal N.A.B. More than 3 injections(no Grey Pwd.)

Tamil.	5.	3.	-	1.	2.	11.
Chinese.			nil.			
Malay.	-	-	-	-	1. (pneumonia)	1

Group vi. Grey powder added to group v.

Tamil.	19(4P).	1.	-	-	2.(1P).	22
Malay. and Chinese,--			nil.			

Group vii. Previous bad obstetrical history(i.e. where more than ½ pregnancies ended in misc. S.B. or N.N.D.

Result of present pregnancy.

Malay.(5).

1. No treatment.

1.	-	-	-	2(1P).

2.Grey powder only.

1.	-	-	-	1.

Chinese.(9).

1. No treatment.

-	-	-	-	3(1P).

2. Grey Powder only.

6	-	-	-	-

Tamil.(39).	N.&.Al.	N.&.N.T.	N.&.D.	Misc.	S.B.& N.N.D.	
1.No treatment.	1.	-	-	4.	3(1F)	8
2. Grey powder only.	4.	-	-	-	-	4
3. N.A.B.& Grey powder.	13.	3.	-	-	2(P).1	8
4. N.A.B. only.	5	2	-	2.	-	9

I think these figures conclusively shew the value of ante-natal treatment in Asiatics as well as Europeans,and also the value of energetic mercurial treatment for the child, if born alive whether the mother has had N.A.B. treatment or not. Bismuth,intramuscularly,was always combined with the arsenic, and glucose given beforehand to prevent dermatitis. The infant had daily inunction with blue ointment as well as grey powder by mouth.

GONORRHOEA. Routine examination of the cervices of all pregnant patients was not instituted till the middle of 1932,and was the outcome of an attempt to investigate the cause of puerperal sepsis in the hospital. The subsequent result of this examination was the discovery that out of those inspected,80% of the Tamils, 88% of the Chinese, 40% of the Malays, and 39% of the "Others" had acute or chronic cervicitis. In 1933 alone,the gonococcus was isolatedin;-

Tamils. ---- 17 out of 98 patients.----- 17%.

Chinese. --- 4 " 51 " ---- 8%.

Malay. --- 4 28 " --- 14%.

and the total for the whole period was;-

Tamils,--- 39 out of 478 patients.--- 8%

Chinese,--- 10 " 225 " --- 4%.

Malay,--- 5 " 85 " --- 6%

The proportion of abortions or miscarriages was very small,as abortion is not a complication that brings many people into hospital.-

Tamil. 3 cases.

Chinese.2 "

Malay. 2 "

Two babies developed ophthalmia in spite of routine silver nitrate treatment ! The culprit was never discovered. Both babies were well on discharge.I presume it is within the bounds of possibility for a mother with active gonorrhoea to carry infection to the child's eyes with her hands. One Tamil child was born blind resulting from intra-uterine infection.

The relationship of gonorrhoea and puerperal pyrexia will be mentioned under puerperal sepsis.

PYELITIS. This was found mainly in the puerperium, in three Tamil patients,one Chinese, and one Bengali.. In the case of the Chinese it was associated with tropical typhus,and in one Tamil with pyaemia.The Bengali developed it after a very prolonged labour(spontaneous),and much catheterisation,having a contracted outlet,and refusing induction of labour at an an earlier date In the case of the other two Tamils,it followed a normal delivery. One Tamil patient developed a pyelo-nephritis which appeared to settle down after treatment,and she refused operation. The value of the new drug "Amphotropin" followed by a ketogenic diet had been tried out on a few non-pregnant patients in the latter half of 1934,and effected a marvellous recovery in the case of the Bengali patient.

COMPLICATIONS OF LABOUR.

1.POST-PARTUM HAEMORRHAGE. A study of the records discloses a maternal mortality of 5 patients from this complication.4 being Chinese, and one Eurasian. In 4 out of the 5 cases it was due to retained placenta,which in these fatal cases was not found very difficult to remove,and in the fifth,the cause was inertia associated with a marginal placenta praevia. All of these patients might have had a chance if transfusion had been available. 18 more patients suffered from this complication,;- Chinese,--4 cases one associated with albuminuria,two with

retained placenta, and one admitted on 8th.day of the puerperium..

Tamil,11 cases,-- 7 following retained placenta,one being very adherent,and the patient dying from anaemia and sepsis ,- one other due to delayed labour following a face presentation;- the 9th.was associated with a large child(6/10 lbs.),the 10th. with albuminuria, and the last of doubtful origin.

Malay, 3 cases,--- Two were due to adherent placenta,one very adherent, and the third was associated with albuminuria.

All the usual restorative measures were adopted, and salines with glucose given freely. To try and prevent this complication, in all cases latterly of delayed or instrumental delivery,or where an anaesthetic (Chloroform) had been given, and in very anaemic patients,pituitrin was given intramuscularly as soon as the child's head was born,and repeated after the placenta had come away.The result was most satisfactory.

2.RETAINED PLACENTA.

Apart from the cases of retained placenta mentioned above as being the cause of fairly severe post-partum haemorrhage,there were 14 other patients who suffered from partial retention.The cause of this high incidence is doubtful.though I am inclined to blame a chronic endometritis. But among these patients,where the cervix was examined,there were only two free from cervicitis,and they had a positive W.R. Quinine taken before labour of course has also been suggested. Ten out of the 32 survivors had some degree of puerperal pyrexia mainly of 2 to 5 days duration,but one patient with gonorrhoea and another with a positive W.R. had an intermittent daily temperature of 10 and 20 days respectively.

3.DELAYED LABOUR and INSTRUMENTAL DELIVERY

Malpresentations and Deformities have already been considered on p.p.21,32 to 34.,where it was stated that forceps were applied in one case of prolapsed cord,and one of persistent occipito-posterior presentation,both with a favourable outcome. One craniotomy was done on the aftercoming head in a Malay patient,and one perforation and forceps delivery of a hydrocephalic Tamil baby.Apart from these it was found

necessary to apply forceps in 30 other patients.

Tamils,--- 17.

Chinese,-- 10.

Malay,--- 3.

Others,-- 1.

I may state that forceps was in every case a last resort,and only applied when there were definite indicative signs of distress on the part of the mother or child.

For ANAEMIA. 3 cases (Tamil).

Result;- Maternal mortality-- 100%

Foetal(gross) " "

" ECLAMPSIA. (anaemia and positive W.R.also).-- 1 case(TAM)

Result;- Maternal mortality-- nil

Foetal " "

" MALARIA. 5 cases.(Tamil)

Result;- Maternal mortality(cerebral malaria) 20%. (1case)

Foetal " 60%. 3 "

" DISPROPORTION. 21cases.

Tamil(11).Maternal mortality-- 9% (1case)

Foetal " 18% 2 "

Chinese(7) Maternal " nil

Foetal " 29% 2 "

Malay. (3). Maternal " 33% 1 "

Foetal " 66% 2 " (craniotomy)

Both the one Tamil and Maly, maternal deaths were due to rupture of the uterus before admission(re disproportion). each associated with a foetal death. The Chinese foetal deaths were traced to albuminuria in one case,and a positive W.R. in the other,while the remaining Tamil foetal death was also associated with a maternal positive W.R. As forceps cases they were on the whole not difficult,except one in which a vesico-vaginal fistula resulted,which fortunately completely healed before discharge. Of the 25 survivors,only 5 developed puerperal pyrexia,and that only from 4 to 7 days.The patients for whom all one's reserve of physical stamina was called out,were the Chinese

impacted breeches !

More than half of the "disproportion" forceps patients were primipara,and the average birth weight of the group;was;-

Tamil,-- 6/7 lbs (normal-- 6/1 lbs. p.8.)

Chinese,-- 7/2 " " 6/13 "

ANAESTHESIA DURING LABOUR.

This for normal cases had to satisfy the following requirements;-

1. A skilled anaesthetist could not be provided.
2. Constant trained supervision of the patient while under the influence of the drug was not possible owing to lack of, and juniority of staff.
3. Extra attendants could not be procured easily if the patient were to develop maniacal or delirious symptoms.

This rather eliminated chloroform, gas and oxygen, (no apparatus anyway), avertin. paraldehyde, barbiturates,- in fact pratically every known form of anaesthesia or analgesia! and as many patients had a comparatively short labour,well within the 4 hour limit,morphia was eventually also cut off the list. Apnoeic babies could not be left to the care of the nursing staff under the conditions of the last four years. However a combination of chloral and bromide during the first stage,and the rectal installation part of Gwathmey's rectal anaesthesia -omitting the morphia and Magnesium sulphate injections- repeated as required gave definite analgesia,and is used in an increasingly larger proportion of patients yearly,especially for primipara.. The results were as follows;-

Year.	Cases.	M.	P.	S.B.	N.N.D.	Asp.	Nor.	Remarks.
1931.	16.	9.	7.	1(P)	1.(P).	-	15.	(stillbirth macerated)
1932	19.	2.	17.	-	1.(W.R. pos.)	2.	18.	(L-forceps 1. tight cord in asp.)
1933.	21.	5.	16.	1. (malaria)	1.(P). (malaria)	2.	20.	(1-forceps, 1- alb.inasp.)
1934.	30.	5.	25.	2. (1-W.R.pos) 1- neph.)	4.	2.	28	(1- forceps 1- W.R.pos.in asp.

The four neo-natal deaths in 1934 were associated with;-

W.R.Positive,--- 1.

Anaemia,-- 1.

Anaemia and malaria -- 1.

Gastro-enteritis,-- 1.

I do not think that this form of anaesthesia in any way affects the child,in fact the ether appears to stimulate it, nor is the incidence of post-partum haemorrhage and retained placenta in the mother any greater in these patients

COMPLICATIONS OF THE PUERPERIUM.

1. SEPSIS.

Puerperal sepsis is somewhat overshadowed as a cause of maternal mortality in this district by anaemia and malaria,but has definitely third place in the running,being responsible for 10 out of the 60 deaths,i.e.17%,-only a little less than all the remaining causes combined. Once again an encouraging note is struck by comparing the annual death rate from this complication;-

1931---	5 deaths--	30%total	deaths,	2% cases.
1932---	4 "	15% "	"	1.7% "
1933---	1 "	9 % "	"	0.5% "
1934--(till Oct.)--		nil.		

Four of these patients were not confined in the hospital but were admitted as puerperal patients in an advanced stage of sepsis.

But while the acute fulminating type of septicaemia is very rare,sapraemia and puerperal pyrexia is common The less degree of virulence of sepsis is,in my opinion, due to an immunity conferred on the community by chronic local sepsis,especially cervicitis and pyorrhoea. This might also explain the lower morbidity rate for sepsis outside of hospital, (apart from contact infection) in many European countries..As already stated(vide p.50), out of all the cervices inspected, 80% tamils. 88% Chinese, 40% Malay,and 39% Others were found to have cervicitis. After trying unsuccessfully serum prophylactic treatment,(unfortunately anaphylactic reactions were too common

for one's peace of mind,and might be explained by deterioration of the drug under tropical conditions,which in Kuala Pilah districtdo not include electric refrigerators);and also intravenous iodine and acriflavine,I have abandoned all these methods,and concentrated on;-

1. Proper drainage for all puerperal patients. Bed rests were found to be useless for this type of patient,and now within a few hours after delivery,the top of the bed is raised on blocks,and remains so for a week after delivery.A knee pillow tied from the top of the bed prevents them slipping down.

2. Ante-natal treatment whereever possible of the cervix. This was made as simple as possible,and consisted of;-

   (a). Painting of the cervix and vagina every 2nd. day with 5% silver nitrate.

   (b). Installation of 1 oz. argyrol into the vagina every alternate day. This was substituted in 1933 by ½ % formalin 6 ozs. on grounds of expense,(0.03 cents as against 24 cents per daily treatment)

3. Injection of .2% acriflavine in glycerine into the vagina after labour began in all patients with a history of vaginal discharge.

4. Exploration of the uterus under morphis ,and removal of fragments of retained placenta where a bright red lochial discharge persisted after the first week,whether the patient had a temperature or not. A rising pulse rate was a better guide for incipient sepsis. Pituitrin was given a trial first. Non-removal of such fragments meant further anaemia for these patients due to the persistent slight bleeding,and they were less able to stand up to further infection.

5. Proper puerperal treatment of the vagina and cervix. To pour a large quantity of fluid over the vulva meant the possibility of some being carried up to the uterus past the septic cervix, and thus infecting the endometrium,while merely swabbing around and changing a pad meant entirely overlooking the presence of a local focus of sepsis. I accordingly instituted the following routine ;-

One bowl of lotion(Hydrarg. perchlor. 1 in 2000 diluted with an equal quantity of warm sterile water)-is used for the whole ward,sterile cotton wool swabs being put into the solution with sterile forceps by an attendant and dropped into the nurse's hands with the same forceps. All discharge lying in the fornices is wiped away by these swabs wrung dry,and wrapped round Kocher's or Spencer Well's forceps. The nurse does not insert her fingers into the vagina at all. One final wet swab is used to swab round the cervix and vagina. Two pairs of forceps are in use and are boiled between each patient,in a small steriliser,and the nurse washes her hands well between each patient and rinses them in the same strength of mercury solution.

Although not infallible,and the constant changing and training of new probationers must be taken into account,- since adopting these measures,the incidence of puerperal pyrexia has dropped by leaps and bounds.. Within the first six months 1932-1933,it halved itself, and during those six months,out of 14 who received ante-natal treatment of the cervix,(normal deliveries),only one developed a temperature of any kind.-This after a 24% incidence. Of course pyrexia includes malaria,influenza bronchitis,pyelitis, mastitis,etc.etc. but this result shews further the result of general continuous ante-natal treatment in a hospital as well as local treatment. Out of 28 cases of gonorrhoea among Tamil patients since adopting this line of treatment,only three developed a temperature of any kind in the puerperium,one being associated with a forceps delivery, while of 11 cases previously, 7 had some degree of puerperal pyrexia. The total incidence of pyrexia among all nationalities for 1933 and 1934 was;-

1933,--- 10%.

1934,-- 9%.

Out of the six remaining deaths from sepsis confined in the hospital,1 was associated with albuminuria one with ? occult nephritis. two with retained placenta,one Malay,admitted with the tear of bladder and cervix,and the last was almost impossible to diagnose from cerebral malaria,there

being no rise of temperature till the 10th. day. Where there was any doubt, sepsis was given the preference. Unfortunately post-mortems on these maternity patients were usually impossible to obtain.

Hobb's method of drainage was found very useful once definite sepsis had established itself. There were no deaths following abortion, septic, incomplete, or otherwise, and I attribute this to following the old method of swabbing the uterus well with iodine after removal of the remains, and leaving an iodine swab in situ for 24 hours after. There was one case of phlebitis following abortion, already septic on admission, and one patient developed "white leg" after a normal delivery (albuminuric).

MATERNAL MORTALITY.

The 60 deaths during the period under review are divided as follows;-

Table 15.

Cause.	1931.	1932.	1933.	1934.	T.
ANAEMIA of pregnancy.	T. 5.(2 not deliv.)	T. 7.(4 n.d.)	5.(2n.d.)	T. 1.(n.d.)	
	Ch.-	CH. -	CH.-	CH. -	
	M. 1. "	M. -	M.-	M. 1.	
				O. 1. "	
Total(21).	6.(3n.d.)	7.(4n.d.)	5.(2 n.d.)	3.(2 n.d.	
MALARIA.	T. 2.	T.12.	T.2.	-	
	CH.-	CH. -	CH.1.	-	
	M. & O.	nil.			
Total(17)	2.	12.	3.	-	
SEPSIS.	T. 5(4 puer.)	T. 3(1 p.)	T. 1.	T. -	
	CH. -	CH. -	CH. -	CH. -	
	M. -	M. 1.	M. -	M.-	
Total(10).	5.(4 p.)	4.(1 p.)	1.	-	
? RUPTURE of uterus(4).	CH. 1.	M.1.	T.1.	M. 1.	

		1931.	1932.	1933.	1934.59.
POSTPARTUM HAEMORRHAGE.	T.	1.	-	-	-
	CH.	-	1.	1.	1.
	M.	-	1.	-	-
	Total(5).	1.	2.	1.	1.
INTERCURRENT diseases(3). (Pneumonia & nephritis)	T.	1.	-	-	T.2.
	CH. & M.	nil			

Anaemia therefore accounts for 35% total maternal deaths.

Malaria " " " 28% " " "

Sepsis " " " 17% " " "

Haemorrhage " " 8½% " " "

Rupture " " " 6½% " " "

Intercurrent disease " 5% " " "

Comparing the mortality by years we find;-

1931.	17	deaths out of	245	patients,---	7.5%
1932.	26	" "	239	" --	10.9%.
1933.	11	" "	183	" ---	6 %.
1934.(Oct)	6	" "	141	" ---	4.2 %.

1932 was the bad malarial year in the district. It is encouraging to note the progressive decrease, though the mortality is still very high. As stated already the decrease in admissions is due to the repatriation of hundreds of Tamil coolies during the "slump" period, and to the return to China of many Chinese for the same reason. The published returns for the whole of the four states shewed a mortality of all "diaeases connected with childbirth" to the total number of births as 1.1% and for Negri Sembilan alone .96%.

INFANTILE MORTALITY.

When one realises that ante-natal care was pratically unheard of in the district before 1932, and Infant Welfare, even less so. it is little wonder that the infantile mortality rate is so high, being about the same level as in England during the middle of the last century.

The larger towns in Malaya now have well equipped infant welfare centres,and separate staffs for them apart from the hospitals,as well as buses to go round the out-lying villages and collect the patients.. Under such circumstances these towns are able to furnish infantile mortality returns that compare favourably with those in Europe. But the backwoods of the country and "ulu" kampongs still continue to live the old life and have the same ideas about the cheapness of human life as their grandfathers before them,and indeed it is the older generations that are so antagonistic to Western medicine,and exert such an influence in preventing the Malays in the kampongs from coming to the hospital. If it were not for an exceptionally nice type of Malay dresser and midwife who regularly visit these kampongs twice weekly,the dresser treating common ailments,and the midwife attempting to gain some slight footing for modern ante-natal and infant welfare ideas, I doubt if I would see one tenth of the Malay patients that I do at present. Infantile mortality is bound up so much with ante-natal care that it is useless to try to keep them in separate compartments,and it is much more satisfying to have one child born healthy that to try to keep half a dozen sickly children alive.

I did not consider it good policy to try to oust the kampong "bidans",and thus antagonise them from the start until young trained Malay women were ready to take their place. The suitable type of Malay woman is very difficult to find,and even more difficult to keep,who is willing to take up a job of any kind,and the process of training will be a long one extending over many years,before there are sufficient trained to make any impression. Meanwhile among the Malays,we see the rather anomalous position of the hospital providing a certain amount of ante-natal care,and the bidans stepping in to reap the benefit ! If all goes well the bidan gets the praise,but if anything goes wrong the hospital are blamed for the medicine and advice given! The local bidans though,have now got enough faith in the Malay hospital midwife, fortunately the possessor

of much commonsense, to call her in now as "consultant" in cases of abnormality or delayed labour,-at least one step in the right direction !

Apart from this uneducated Malay midwife, a trained Eurasian nurse was provided, after much importuning, to start a venereal disease clinic, and also to do some health visiting, in this case mainly infant welfare, within the sanitary board area. The Chinese and non-estate Indians were more her province, and the excellency of her work may be guaged by the fact, that, out of all the Chinese babies discharged well from hospital from 1931 to 1934 who remained in the district, only about 3 have died since. In fact the infantile mortality rate for the Chinese in the district is less than that of the nearest town all complete with welfare centre and staff. It is a different story however among the Malays.

In 1933 the mortality rate was as follows;-

Federated Malay States.---	146.
Negri Sembilan. -----	147.
Kuala Pilah district.-----	143.

I think though, that the rate for 1934 is higher again, but the figures are not yet to hand.

SUMMARY and CONCLUSIONS.

To summarise;-

1. The three main nationalities comprising the population, are so distinct from one another, and present such different problems, that they cannot be grouped together for statistical purposes.
2. The Malay population are actually fewer in number in Malaya than the immigrant population, but outnumber them in the Kuala Pilah district, which is more rural than urban. Originally descended, as they are, from a mixture of the black and yellow races, they embody characteristics of both, and occupy a position midway between in resistance to disease.
3. Racial diet appears to play a very important part in-
   (i) Determining the birth weight of the child.
   (ii). The causation and prevention of diseases of pregnancy.

Toxaemia appears more marked in those on a higher protein diet, and anaemia, with consequent lessened bodily resistance in its train, occuring more frequently among those on the more purely carbohydrate diet.

4. The incidence of prematurity and its sequelae is very high in the district, and the wastage of infant life much greater than in European countries.

5. The general maternal mortality is more than double that of European countries, but this can be traced to;-

(i). Anaemia of pregnancy, most marked among the Tamil immigrant population, and therefore not dependent on local factors.

(ii). Malaria,-a purely local factor, which appears to shew progressive improvement year by year.

6. Alone among the complications and abnormalities of pregnancy, pernicious vomiting of pregnancy, and acute yellow atrophy of the liver, have not yet been met with.

7. Puerperal sepsis though found frequently, does not appear to be of such virulence as in Western countries. The comparative rarity of scarlet fever in Malaya has been mentioned by other observers in this connection, though I have met the disease.

8. Ante-natal care proved of the highest value in the prevention of an even higher maternal mortality. It was especially useful in;-

(i). Correction of malpresentations.

(ii). Detection and treatment of early signs of toxaemia.

(iii). Prevention of puerperal malaria by a course of atebrin and plasmoquine.

(iv). Detection and treatment of other diseases during pregnancy in an attempt to raise the patient's resistance.

(v). Detection and treatment of local sepsis especially in the form of cervicitis, in the attempt to try and prevent puerperal sepsis.

(Vi). Detection of relative disproportion between the foetal

head and the maternal pelvis,and by induction of labour at a suitable moment,preventing danger to the life of both mother and child from instrumental delivery,trauma,or damage to the perineal floor and adjacent organs.

(vii). Prevention of foetal mortality due to syphilis on the part of the parents.(paternal-possibly of a toxin nature and might be responsible for many cases of a bad obstetrical history where the mother's W.R. was negative.

9. Once Caeserean section becomes acceptable to the Asiatic community,at present averse to "cutting" operations,it will be interesting to note the relative mortality.At present there is very little place for it in the practice of midwifery in this district.

I have tried out of a welter of foreign scenes, tongues,and ideas.and out of the chaos of conflicting diseases and often much difficulty in diagnosis and treatment,to form a picture of the work of the last four years,and to find if possible, some thin line of continuity for the future,in an endeavour to to face the problems of maternal and infantile mortality in this small corner of "an outpost of the empire"! Truly "experience teaches",but it can be a hard taskmaster!

H. I. Robertson.