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THE MADRAS  
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No. XXXIII.—SEPTEMBER, 1872.

ORIGINAL ESSAYS.

ART. XI.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevelly, during the years 1809, 1810, and 1811.*

*(Continued from page 121.)*

SECTION SECOND.

*The Climate that has been experienced in these Provinces since November 1808 up to the present period, contrasted with that above mentioned, with its effects on the cultivation of the soil.*

We shall now proceed to say something of the climate that has prevailed in the districts in which the fever has raged for three years past; by comparing which with that of common years we shall find in the result that irregularity of season and that unnatural state of the atmosphere at certain periods which we conceive to have been the great general cause of all those ills which have occurred.

The years 1804, 1805, 1806 and 1807 were remarkable all over the Coimbatore, Dindigul, Madura and Tinnevely districts for their dryness; but they were very healthy. In 1808 a great deal more rain fell in the three first mentioned districts than there had done for several seasons before; but in the Tinnevely province the monsoon of that year was unusually heavy and was succeeded by a more than common cold wind in January and February 1809.

The monsoon of 1809 was of more than usual severity, but less so in Tinnevely than in the northern tracts of our prescribed range. It began very early and at first mildly in the Coimbatore, Dindigul and Madura districts, that is to say, little rain fell in those countries early in November: but, when the month was more advanced, and in December, the fall for several days was heavy and incessant, and the Cavery and Vyaar rose to a prodigious height; particularly the first, which overflowed its banks to a greater extent than it had ever been known to do by the oldest inhabitants of Trichinopoly.

January and February 1810 in Madura and Dindigul were pleasant months and the air in the former cold and bracing, but in Tinnevely it proved neither. In the northern districts of our range there were occasional showers about the end of March, in April and at the beginning of May, with their usual attendants at this season, clouds of dust, thunder and whirl-winds; but the southerly winds were much weaker than usual and must on that account have but partially ventilated many tracts situated amongst the hills as well as others which border on them. No rain fell in Tinnevely till late in May, when the south-west monsoon burst over the Western Ghats, but not with more violence than common.

The west wind in 1810 was observed, in the northern districts as well as in Tinnevely, not only to be less strong than usual but in place of continuing to blow fresh till the end of August or beginning of September it lulled early in July. Heavy rain fell in August and September; October and November were excessively close and sultry. Late in the latter month the north-east monsoon commenced in the Dindigul and Madura countries and poured over them absolute floods, bursting their tanks and laying all the low lands under water. Torrents rushed down the sides of the mountains in the first mentioned district, with such violence that several hamlets were swept away in the Toddy-

comboo division. The Vyaar river at Madura was impassable even by elephants for many days and flooded the country east of that capital for miles.

"The great tank at Ramnad, in which this river terminates its course and which usually is not filled for seven years together, burst its banks and ran into the sea. Reservoirs of water that had been dry cultivated or pasture fields have since those unusual rains contained more or less water and the ditch surrounding the Fort of Madura particularly, which for years had been dry, has been constantly kept full of water. The level of the water in the walls within the Fort, which in 1806 had been 20 feet from the surface, has risen at times to within 3 feet of it."\*

In the Tinnevely district the rainy influence of the north-east monsoon, which we have observed in common years not to be so considerable as in those situations lying further north, was this season severely felt. The rains began late and at first were trifling in quantity, but on the 5th of December they commenced falling in torrents, and continued so to do till the evening of the 8th, when the Sytaar and Tambarapoornie came down in vast and sweeping floods, destroying several villages,† causing the loss of many lives, carrying away hundreds of sheep and cattle, overflowing the country for miles and rendering insular the habitations of most of the Europeans belonging to the stations of Palamcottah and Tinnevely.

The same rains brought a great accession‡ of water into the salt marshes, which was kept up by the subsequent floods falling out of season in February, March and April. The consequence was, that in place of the vapours from these swamps being quickly exhaled by the dry weather which usually ensues after the monsoon, they continued for a period of nearly four months, and to a season when they could not fail of proving most injurious by being converted by the superagency of a close and sultry heat from a simple saline exhalation into putrid, salt-marsh miasmata: the fatal effects of which have been but too severely felt, as may be

\* See the paper of the 3rd Member of this Committee which has lately been laid before Government by the Medical Board.

† And a still greater number of huts, particularly those of Toddy people, in the talook of Calcaud.

‡ To such an extent did the water then rise in some parts that it reached half way up the Palmyra trees.

seen by referring to the account of the deaths in the talook of Punjmahal.\*

The inundation in December 1810 did not produce, as might have been expected, that cold state of the atmosphere which usually follows the north-east monsoon rains—a singularity which was not confined to Tinnevely, but also distinguished this season in Madura, Dindigul and Coimbatore, in which provinces the months of January and February were remarkable for a very faint north wind and a hot and clear sun-shine. February, March and April, which in proper seasons are proverbially dry on the Coromandel Coast, this year exhibited all over the southern territories a rare, unnatural and extraordinary variation of heavy† rains, accompanied by the still more uncommon phenomena of an occasional north-east wind and much thunder and lightning.

In speaking of the climate of these provinces in regular seasons we observed that during the months of March, April and part of May strong ventilating and scorching winds prevail; but such was not the case in 1811. On the contrary, the southerly wind was languid and wavering, the most distressing lulls were frequent, quickly alternating with sudden gusts of bleak air and accompanied with heavy showers from the north or north-east. But if this feeble state of the southerly wind was so conspicuous in the open country, what must it have been in situations near to, or altogether amongst the mountains where, at this season, a dry ventilation is essentially necessary? What was peculiarly observable in the state of the atmosphere at this time (the period too at which the epidemic raged with the greatest violence) was a certain denseness in it, sometimes almost creating a difficulty of breathing, a feeling we had occasion to experience about the middle of April at Dindigul; and we learn from Mr. Hepburn that at Tinnevely it was equally remarkable and as distressing. There was besides during

\* See No. 5, a paper which accompanies this report.

† These rains, truly called unseasonable, began early in February and continued more or less during the greater part of it. About the beginning of March they fell very heavily for days together and were frequent during the rest of the month. In April there was much rain and the sun was generally obscured by clouds. May was drier, though by no means so much so as in common seasons.

‡ From every account we have received it appears that the most unhealthy period in all the four districts was from towards the end of February to the beginning of May 1811.

these months a singular oppressive, hot and steamy vapour, which rose from the groves which gave a sensation not unlike what is occasionally experienced from a crowded assemblage of people in a room. Added to all this, the dews, which in common seasons are pretty well over by the middle of March, continued to fall heavily so late as the 19th and 20th of May and could not fail, by chilling the body after the relaxation of a hot night, to prove productive of infinite mischief.

The west wind did not begin to blow so early as usual this season and was by no means so strong as it commonly is, through the whole extent of the four districts. After having commenced it ceased again for several days, towards the end of May, giving place to gentle airs from the east and south-east in June; and early in July it was everywhere observed not to be so powerful as usual, and in the Streepulputtore Talook of the Tinnevely district there were great complaints of its inefficacy; though it has since blown with greater force and now (the end of August) the climate not only appears to be nearly what it ought to be, with regard to winds,\* but to have in a great measure gratified the hopes and expectations of thousands, by changing the constitution of the atmosphere and almost entirely banishing the epidemic fever.

From the account which we have thus given of the climate of Coimbatore, Dindigul, Madura and Tinnevely for the last three years, it will readily be allowed that the different seasons during that period have varied much from their common course. Inordinate rains have succeeded to uncommon drought; the north-east wind and land-wind have been weak as well as of undue duration; the most distressing lulls have alternated with sudden and chill blasts from various directions; and last of all, and what appears to have brought the mischief to a crisis, heavy rain and close sultry weather have taken place at those times which are usually distinguished by dryness and, by those ventilating breezes which exhale the superfluous water from low and marshy

\* From a due degree of strength in the drying and purifying west wind we ever conceived that much benefit was to be looked for. In the Carnatic, where such winds are always dry, epidemic fevers are not known, as was noticed by Dr. Lind many years ago. Zimmerman in his "Experience" dwells much on the advantages often derived from strong winds by purifying the air from noxious vapours. See his Experience, Vol. 2nd, page 154. English translation.

situations and dispel the vapours which never fail to occur after the north-east monsoon. Thus there has been an extraordinary and unnatural state of the everywhere unsalutary in the tracts in which it is spread, or into which the distempered miasmata may be carried by particular currents of air.

The stagnation, vegetable putrefaction, dampness, filth and offensive effluvia, the natural consequences of what we have just stated, have proved evils of no small consideration, particularly in low or ill-ventilated situations.

The 2nd Member of this Committee in travelling from Darampoomam to Dindigul in the beginning of June, and on passing along the banks of several marshy tanks, as well on the western frontiers of the first mentioned district as in the Toddycomboo talook of the second, was assailed by a noxious and sickening exhalation which somewhat resembled bilge water. And the President and 3rd Member experienced exactly the same effect from similar causes towards the end of the same month in passing from Towerincourchie to Cottampetty in Madura province; and again for several miles on the road leading through and on the north side of the large and beautiful town of Streevulputtore in Tinnevelly country.

It can easily be supposed that a continuance of unseasonable weather for several years together must, with other bad consequences, have proved injurious to the cultivation of the soil. In Coimbatore, however, which is chiefly a dry-grain country, in which superfluous water is quickly carried off into rivers and nullahs, this has not been conspicuous; and by Mr. Garrow's return it does not appear that any particular sickness has prevailed amongst the cattle of that district.

With regard to the Dindigul country, we had occasion, while there, to observe in the month of April last that so general was the sickness and so great had been the mortality that the Sumbah crop of paddy was actually in some places rotting on the ground from a want of hands to cut it down. And Mr. Peter informs us that many thousands of cattle have died in the different divisions under his management since the time that the epidemic first commenced, as much, we are inclined to think, in consequence of the unnatural state of the air as from a scarcity of hands to feed and take care of them.

In Tinnevelly, we understand from Mr. Hepburn that not

less than 44,273 cattle have died in his Collectorate since the beginning of February last; not so much from any particular disease as from an excess of moisture in the air and a want of people to take care of them. Mr. H. has further informed us that the great Peshanum Sumbah crop, which is gathered in February and March, was got in in a much less perfect state than usual, from its being so frequently wetted and from the inhabitants being obliged to cut it down before it was quite ripe, owing to the dread they entertained that, if they allowed it to stand longer, they would lose a great part of it from the violence of the rains. Such stunted and immature grain, when stocked, was apt partially to ferment and get heated, which rendered it a much less wholesome food than if it had been cured in a better condition; and he has also said, that so general has this calamity proved in the Tinnevelly district that the greatest difficulty has been experienced in procuring the small quantity of grain required for seed for the cultivation of the present year. The dry grains from the same cause have also suffered much, and must in consequence have been rendered less nutritious.

Having deemed it proper at this part of our Report to notice the circumstance of the crops of these countries having suffered much from unseasonable rains and that the quality of the edible products had been thereby injured, we must here observe that though the necessity thus induced of eating a somewhat less wholesome grain than usual cannot be considered otherwise than as a great misfortune, yet it can form no part of the original cause of the epidemic fever which had commenced at a period antecedent to the failure of the harvest, though it certainly may by inducing debility have contributed much to augment the fatal nature of the disease.

### SECTION THIRD.

*Rise, progress and direction of the Epidemic in the different districts. Numbers that have died of the disease within certain periods, compared in some instances with those in common years. At what time the Fever appears to have raged with the greatest violence.*

When it is considered that one great cause has chiefly prevailed in producing a distempered constitution of the at-

mosphere in the southern provinces of the Indian peninsula, we are much inclined to think that, although in some of these countries the effects may at first have been but trifling (and therefore little noticed), they must all have suffered in a greater or less degree nearly about the same time; with this difference, that such tracts as from their situation or peculiar nature were most fitted for nourishing or increasing the operation of the evil would, of course, feel its influence to a greater extent.

After several years of unusual drought, we observed that heavy monsoons and irregularity of climate became conspicuous in 1808, and have continued to be so up to the present period; and it is from the commencement of this deviation from natural order that we can trace the earliest approaches of that sickness which has since proved so fatal.

The first public notice we have of the epidemic fever (except Dr. Christy's official communication to the Superintending Surgeon of the Southern division in 1808) is that of Mr. Garrow, in a letter to the Revenue Board, of date the 25th of October 1809, about which time he speaks of its having severely raged in his Collectorate in the Chuekra-gherry taluq, at places called Columbum, Cullapuram and Comaralingum, and which, he adds, are close to the hills, marshy and proverbially unhealthy. It soon after extended to many other villages in a northerly direction, thence eastward to others in the vicinity of Darampuram, and in October last it had made its way still farther towards the north. But by Mr. Garrow's account it received a check in January 1811, not however before it had committed great havoc, especially from the months of January 1810 to June of the same year, during which period 8,924 persons died in the Coimbatore division only.

The favourable hopes that were entertained at the beginning of the year 1811, we are sorry to say, were but too soon blasted, for after the untimely rains in February the disease recommenced its work of destruction with great severity and spread not only amongst those villages, the most liable from their low sites to be visited by such maladies, but to others standing much farther east, high, dry, and, in common seasons, healthy.

Mr. Garrow has informed the Committee that the almost universal opinion in Coimbatore is, that the epidemic fever first entered that district from the direction of the Pylney mountains and, according to his own observation of the

malady, its course has been from south to north, inclining towards the east, and from the hills near to which it first showed itself, after the most unseasonable of all the irregular weather we have mentioned;—we mean that occasioned by the falling of heavy rains and dews in February, March and April.

Although the statement we have of deaths from the Collector of the Dindigul district does not extend farther back than to the 1st April 1810, yet we are well aware that the epidemic had been prevalent there before that time. By information received on the spot, we know that many had sunk under it at a period antecedent to that above mentioned, especially in the sequestered zemindaries of Neelacotta and Sundyhoor, and in the Toddycomboo division.

There is in this province also a general belief that the Pylney mountains gave birth to the evil; it certainly evinced the same peculiarity here that we observed in Coimbatore, viz, that it was first noticed in low situations near the hills, and afterwards, as the general cause extended, its baneful influence spread to tracts naturally drier and more healthy.

We see by Dr. Christy's paper that a fever prevailed in certain parts of the Madura district as early as 1809, and more or less in the fort itself about the same period. It would seem at that time, however, to have been chiefly confined to the poor who occupied the lowest huts and seldom attacked the better sort of people who lived in elevated houses of brick and stone and slept on couches, nor were many Europeans that year affected by it.

In 1810 the disease became more general and alarming than in the former season, as well in the city of Madura as at other places of the provinces. It now neither spared Europeans nor the more wealthy inhabitants and proved fatal in many instances. But, as in the other territories we have mentioned, the months of February, March and April 1811 appear to have been by far the most calamitous era, no doubt from the causes we have already assigned.

In this district, like the others within our range, the Pylney mountains are considered by the native inhabitants as the great cause of all their misfortunes; but here we find an extension of the epidemic, not as in Coimbatore from south to north, but from north to south. Here it has also been invariably remarked that it was in low situations close to the hills, such as at Towerincourchie and Sholavandum, that

the fever first attracted notice, and that the rains and close weather in February, March and April had the unhappy effect of diffusing the morbid miasmata over tracts farther east than they had before reached and comparatively high and dry. Divisions, however, nearer to the sea, or rather farther from the range of mountains in this Collectorate (such as those of Shevagunga and Ramnad\*), have nearly escaped the disease altogether, as was witnessed by the 2nd and 3rd Members of this Committee during an excursion they lately made through that zemindary.

The Collectorate of Tinnevely seemed for a time as if kind Providence had averted from it the mischief which was destroying so many thousands in countries lying but a short distance from it; but it soon appeared that the evil was only retarded. It is true that in the months of March, April and May 1810, as we are informed by Mr. Hepburn, fever had attracted a little notice in the northern and western parts of the district. It was, however, trifling and but of short duration and no more was heard of it till the month of February† 1811, when it shewed itself very generally in the talook of Strevulputtore (which is contiguous to the Madura province) and in Tencoushie, both of which lie near the mountains. Soon after this it broke out in the vicinity of the sea and salt marshes, and committed great ravages in the Punjamahall‡ and Calcaud § talooks; and lastly, it extended itself from Tencoushie to the more southern tracts (including the Pollams) and kept on its course all the way to the sea; but invariably proving most destructive in those villages situated nearest to the hills.

From the above account there will be observed this singularity, that in the neighbourhood of the salt marshes the disease made its appearance at a period prior to that at which it first began in places lying betwixt them and

\* Kilearry and its neighbourhood must here be excepted, where, from the vicinity of a salt marsh, the fever has been prevalent for some months past.

† It was at this period that many pilgrims returned from a feast at Polny where the fever then was and had been for many months. These pilgrims had left their own villages about the end of January 1811, at which time there was no fever in them. Shortly after they had come back to their own homes, however, they were all seized with fever and we are sorry to add that scarcely one of them is now living.

‡ This talook stretches from Shengulotum to the southern extremity of the peninsula.

§ This stretches from Trichindore to Manapar along the seaside; twelve villages in it have suffered dreadfully.

Tencoushie—circumstance which leads us to conclude that, in these briny swamps of the Tinnevely district, a separate source of the disease is to be looked for from that which occasioned the sufferings of those inhabiting the more northern divisions of the same Province.

The malady, on its way south from Tencoushie, would appear to have got first into the Bramadashum\* talook in an alarming degree about the beginning of March, especially in the village of Veeramasingapuram (near the Papanossum cataract), in which so great a mortality soon ensued that it was with difficulty hands sufficient could be procured to bury the dead. In Shermadavy the epidemic was felt somewhat later (not before the beginning of April), and then, though numbers died of it, neither was nor has since been so severe as in some other divisions, owing perhaps to its having the Polygar countries betwixt it and the western mountains.

In Nelleumbalum, in which talook the city of Tinnevely stands, the disease, if the city itself is excepted, did not commence so early as in situations nearer to the hills. In the month of April, however, it appears to have been very prevalent, as most of the inhabitants were then sick and many died, particularly in the town of Caddium. In the talooks of Vedoogramum, Stryvygoonthum, Gaingoondum and Alvar-tinnevely, the disease has been much less destructive than in other parts of this province; although in them there has also been a greater degree of sickness than in common years; and this peculiarity in their favor we can only account for from their lying at a considerable distance from the great ghauts and from their standing higher above the level of the sea; to which causes also is, in a great measure, to be ascribed the comparative healthiness of Shenkernacoil, which extends to the hills only at one corner, being at other points separated from them by the Pollams of Shevagherry and Chokumpetty.

From what we have said of the rise and progress of the malady in the province of Tinnevely, it will be concluded that the general direction of the morbid influence has been here opposite to what it was in Coimbatore (which was from south to north and a little east), and that it corresponds with that which it took in the Madura district, which was from north to south. We have moreover ob-

\* Most of the villages in it lie near the hills and are surrounded by much low and marshy ground.

served that the closer to the hills the danger was the and that in some tracts, in the of the salt marshes, along the sea-side, there appeared to have been altogether a separate spring of epidemic malignity.

With regard to the two opposite directions in which the distempered exhalations seem to have extended themselves in different parts of the peninsula and the cause or causes of this varying course, we confess that we give our sentiments with great hesitation, as the subject not only involves in itself considerable difficulty but naturally leads to some yet undecided points and to the theories and opinions of certain ingenious men respecting the propagation and diffusion of miasmata and contagion.

We have repeatedly noticed that great irregularity of seasons had taken place throughout the whole of the Southern provinces and it is certainly allowable from a universal cause to look for a general result, but while the same description of universal climate may have prevailed in all those territories, yet the lands themselves may have had localities or peculiarities of soil and nature, as, although under one common influence, to have proved productive of effects differing much in degree. Thus it is that a long continued unnatural state of the air, operating upon the close and overgrown woods of the Pylmy mountains, upon their unventilated vallies and stagnant marshes, could not fail to engender a more rapid and dangerous mal-influence than the operation of the same seasons on the drier and less jungly plains of the eastern ranges of the peninsula. In the same manner and for the same reason, the changed constitution of the atmosphere has been creative of ill effects in the vicinity of the salt marshes of the Tinnevely country, differing much in extent from those experienced in other estates which, though at no great distance from them, are otherwise circumstanced with respect to nature and situation.

The fever which has occasioned so great a mortality on the Coromandel Coast was first purely endemic and, in all probability, had the irregularity of seasons been of short duration, it would not have been heard of beyond the sources from which it sprang, although we find, and that from high authorities\*, that even the causes of endemic fever are some-

times carried by particular currents of wind to a considerable distance; but on the disease having been rendered epidemic by the same means\* which bring about this change in every quarter of the world, its nature as usual became in some respects altered. "Fevers of this sort," (says Dr. Jackson) "arise in particular countries or districts of a country; they travel in certain tracts, sometimes confined to narrow bounds, at other times they are more widely diffused."

We have seen this epidemic of India spreading its poisonous breath from south to north and a little east in Coimbatore province, as much perhaps in consequence of the extension of moisture combined with heat, as it may have been assisted on its course, from what the natives suppose to be the grand endemic source (the Pylmy mountains) by the south-west winds in the months of March, April and May. In the Dindigul territory this mischief, if carried by the winds, had not far to travel from the same unwholesome spring. Independent of which, however, the Dindigul district had in itself other localities extremely likely from their nature to have generated endemic fever; such as the low Toddycomboo division, the valley and that singular mountainous amphitheatre which surrounds Towerincourchie and its marshy neighbourhood.

The garrison of Madura and other places situated nearer to the hills in this district become absolute hot beds for fever in the seasons we have had occasion to lament, and must, if the notion be just that the morbid miasmata can be conveyed from place to place by particular currents of air, have been of extent sufficient to have affected the whole province.

Tinnevely, we have seen, did not suffer much before the heavy rains in 1811 and at that time there are two ways in which we may suppose the evil to have been produced, viz., either as originating and spreading from endemic sources within the district itself, or as it may have been conveyed hither by the north-east monsoon winds which still prevail in the month of February, and perhaps both of these may have had their share in bringing about the general

\* See Dr. Jackson's remarks on the Constitution of the Medical Department of the British Army, page 212. See also Zimmerman's Experience, Vol. 2nd, page 155, English translation.

\* Hoffman tells us that intermittent fevers are most common in autumn and spring, and that they are endemic in low marshy situations; but that, when rainy, variable seasons succeeded hot summers, they frequently become epidemic.—Vide Medical Rat. Syst. Part I. Cap. I.

calamity,\* though we confess we are inclined to think that if the extension of the disease was as much occasioned by miasmata being carried by the breeze as it is dependent on a peculiar and general state of the air, we should occasionally see it spread itself wide of those tracts it has invariably been observed to pursue and which are ever found to be those nearest to, and in the direction of, the great endemic sources.

We regret that the account of deaths which we have received from the different Collectors are not all for equal periods, nor made out according to one prescribed form; circumstances which will prevent us from rendering such exact comparative statements as we otherwise should have had it in our power to have done. We trust, however, that they will not be unsatisfactory, as they will shew the varied extent of the calamity in the different districts. The return† of deaths transmitted to us by Mr. Garrow for the Coimbatore Collectorate is for sixteen months, that is, from the 1st of January 1810 to the 30th April 1811, during which time there died in the different talooks (twelve in number) 12,458 males and 9,993 females, making a total of 22,451. The population‡ of the Collectorate in Fusly 1219 amounted to 596,606, so that on the whole population we may reckon that in the sixteen months there have died about 3½ per cent.

To shew the centage of deaths in the different talooks of this province, compared with their varying population, we have constructed the following table, by which it will appear

\* However singular the coincidence of the pilgrims having brought the epidemic fever with them on their return to Tinnevely from Pylay in February 1811, we cannot allow, at all events we deem it not probable, that the malady was in any degree propagated in this district by means of contagion, and Dr. Jackson has told us that no medical fact is better established than that diseases of this nature are not contagious.

† See No. 1, a paper which accompanies this report.

‡ See No. 2, a paper which accompanies this report.

that in the Pillanche and Satimungalum divisions, both contiguous to the mountains, the fever has been the most destructive; the first having lost during the period above-mentioned 6½ per cent. of its whole inhabitants, the other 5½ per cent:—

| Talooks.                   | Popu-<br>lation. | Deaths. | Per cent-<br>age. |
|----------------------------|------------------|---------|-------------------|
| Coimbatore ... ..          | 83,832           | 3,558   | 4½                |
| Cheroor and Cooroomandoor. | 50,413           | 1,896   | 3½                |
| Parindorie ... ..          | 53,193           | 1,503   | 2½                |
| Erroad ... ..              | 82,326           | 861     | 2½                |
| Andoor ... ..              | 44,806           | 1,955   | 4½                |
| Satimungalum ... ..        | 50,326           | 2,567   | 5½                |
| Colingall ... ..           | 44,426           | 1,712   | 3½                |
| Caroor ... ..              | 54,015           | 1,691   | 3½                |
| Darampooram ... ..         | 59,047           | 1,461   | 2½                |
| Pillanche ... ..           | 41,438           | 2,878   | 6½                |
| Chuckragherry ... ..       | 44,478           | 1,260   | 2½                |
| Pullaundum ... ..          | 38,756           | 1,109   | 2½                |
| Total...                   | 596,606          | 22,451  | 3½                |

The statement\* which we have received from Mr. Peter the Acting Collector of Dindigul district, shews the number of people who have died in it during a period of

\* See No. 3, a paper which accompanies this report.

twelve months, that is, from the 1st of April 1810 to the 31st of March 1811, contrasted with the deaths which usually happen in the course of a common year.

In the four divisions of Toddycombo, Iyempilly, Tenkerry and Wootampolam, and in the minor and sequestered Zemindaries, there have died of males and females together within the twelve months 21,510.\*

In healthy years the mortality is said to be annually about 3,438, which makes a difference of 18,072. The population of the Divisions and Zemindaries in Fusly 1212 amounted to 295,654, so that in the twelve unhealthy months there has died about 7½ per cent. of the whole inhabitants. The different divisions of this district have suffered in the following proportions:—

|                                                                                                                                  |     |
|----------------------------------------------------------------------------------------------------------------------------------|-----|
| Where 100 men would have died in common years in the sequestered Zemindaries, there have died within the period above stated ... | 832 |
| Do. do. in the minor Zemindaries ...                                                                                             | 733 |
| Do. do. in Wootampolam division ...                                                                                              | 675 |
| Do. do. in Toddycombo ...                                                                                                        | 591 |
| Do. do. in Tenkerry ...                                                                                                          | 513 |
| Do. do. in Iyempilly ...                                                                                                         | 484 |

So we find that the sequestered Zemindaries have been the most unhealthy and the division of Iyempilly the least so.

The statement† which we have received from Mr. Peter, the Acting Collector of the Madura district, is also for twelve months up to May 1810, by which it appears that in the seven talooks of Mandakolum, Sholavandum, Teramungalum, Aunyoer, Theorumboor, Mellere and Nattum there have died, males and females together, 24,626. In a healthy season the number of deaths is said to be about 3,933 annually, which makes the great difference of 20,693. The population of the province in Fusly 1212 amounted to 245,654, so that in sickly months there died about the proportion of 10 per

\* The deaths in the thirteen Pollams of this district are not here included as they have not been given to us with confidence, owing to the returns from these countries being not altogether within the control of the Collector. They (the deaths) are supposed to have amounted to 12,091 from the 1st of July 1810 to the 31st of March, 1811.

† See No. 4, a paper which accompanies this report.

cent. of the whole inhabitants. The divisions of the Madura district have suffered in the following proportions:—

|                                                                                                                      |       |
|----------------------------------------------------------------------------------------------------------------------|-------|
| Where 100 men would have died in common years in the talook of Nellore, there have died in the twelve sickly months. | 1,147 |
| Do. do. in the talook of Mandakolum....                                                                              | 821   |
| Do. do. do. Sholavandum...                                                                                           | 772   |
| Do. do. do. Aunyoer.....                                                                                             | 601   |
| Do. do. do. Teramungalum.                                                                                            | 592   |
| Do. do. do. Theorumboor...                                                                                           | 507   |
| Do. do. do. Nattum.....                                                                                              | 486   |

By the statement\* delivered to us by Mr. Hepburn, Collector of the Tinnevely district, it appears that in the eleven divisions of Shermadavy, Nelloumbalum, Vedoogramum, Bramadashum, Tencoushie, Streevulputtore, Shunkernacoi, Stryvygoontum, Calcaud, Alwartinnevely and Punjmahal, together with twenty-seven Pollams, there died within five months, that is to say from the beginning of February to the 30th of June 1811, of males and females together 38,202. The population as it appeared in Fusly 1211 amounted to 690,696, which gives a centage of deaths in that period of about 5½.

The following is the centage proportion of deaths in each particular Division, calculated according to the respective population:—

|                      |              |
|----------------------|--------------|
| Tencoushie .....     | 12 per cent. |
| Streevulputtore ..   | 6½ do.       |
| Bramadashum .....    | 6½ do.       |
| Calcaud .....        | 5½ do.       |
| Punjmahal .....      | 5½ do.       |
| Nelloumbalum .....   | 4½ do.       |
| Shermadavy .....     | 4½ do.       |
| Vedoogramum .....    | 4 do.        |
| Shunkernacoi .....   | 3½ do.       |
| Stryvygoontum .....  | 3½ do.       |
| Alwartinnevely ..... | 3½ do.       |

It would therefore appear upon the whole that in the District of Tinnevely the epidemic fever has raged with the greatest violence, as in the short period of five months 5½ per cent. of the population have fallen a sacrifice to the disease; but to render our account the more satisfactory,

\* See No. 5, a paper which accompanies this report.

we shall add a short table showing, in some measure, the comparative calamity that has befallen the respective provinces:—

|                             | Popu-<br>lation. | Deaths. | Centage<br>of<br>Deaths. |
|-----------------------------|------------------|---------|--------------------------|
| Coimbatore for 16 Months... | 596,606          | 22,451  | 3½                       |
| Madura for 12 Months ...    | 245,654          | 24,026  | 10                       |
| Dindigul for 12 Months ..   | 295,654          | 21,510  | 7½                       |
| Tinnevely for 5 Months ...  | 690,696          | 38,202  | 5½                       |
| Total...                    | 1,828,610        | 106,789 | 5½                       |

#### SECTION FOURTH.

*Causes of the Epidemic, with suggestions respecting the circumstances that may have rendered it peculiarly fatal in particular situations and to certain descriptions of people.*

Celsus,\* one of the most correct observers amongst the writers of antiquity, has said that those seasons are ever the most salutary which are most uniform, whether hot or cold, and that those which vary much are the sickliest—general principles which, we believe, have never been disputed. We conceive them to have operated powerfully in producing the evils which we have been called on to investigate; and in the Third Section of this paper we have noticed that so justly were they appreciated by Hoffman that he deduced from them his general remote cause of epidemic fever.

The actual state of the atmosphere which engenders this malady no one† has been able hitherto to detect, though

much ingenuity has been displayed on the subject; and we may with safety say that when Sydenham\* ascribed such complaints to a "secret constitution of the air," he gave us as satisfactory an account of the matter as any more modern author has since done. But although we cannot positively determine what this "secret constitution" is, we can pretty nearly ascertain under what circumstances it arises.

Dr. Cullen has used the words *marsh miasmata* to express what he conceives to be the remote causes of remitting and intermitting fever; and although the chemical nature of the distempered exhalations has not yet been discovered, owing to the poison being so completely mixed and blended with the air, he expresses a firm belief in the truth of his assumption, from the maladies of the nature in question so constantly prevailing in low and swampy situations. Many such we have taken notice of in the First and Third Sections of our report. This opinion, however, of the cause of fevers of the intermitting kind has been perhaps too implicitly adopted by some modern writers, who seem to think that a state of the atmosphere capable of generating the disorder can only take place in marshy countries, though it is well known that noxious vapours from woods, especially if thick and ill-ventilated, are as certainly a source of the same mischief—a fact which has been mentioned by Dr. Donald Munro,† but more particularly by Dr. S. Farr in his ingenious Preliminary Discourse to his translation, of Hippocrates' History of Epidemics. There he tells us that wild woods in uncultivated countries have been observed to give birth to that peculiar condition of the air which may be the cause of epidemic diseases. Admitting then, which we most readily do, this second source of the malady, we shall not be obliged to look far for it in the southern district, as not only are all the mountains and their intervening vales which form the western boundary of these countries covered with wood, so overgrown as to be in many places almost impervious; but there are in the Dindigul and Madura provinces many other detached hills and valleys between, thickly clothed with jungle and various sorts of rank vegetation, to say nothing of the extensive tracts of underwood so frequently to be met with.

\* Vide Celsi. Lib. III., Cap. I.

† See Dr. Jackson's Treatise on the Fevers of Jamaica, page 73.

\* See Swan's Sydenham, pages 7 and 8.

† See Dr. Donald Munro's Observations on the Diseases of Soldiers, Vol. II., page 63.

There is still a third origin of morbid miasmata to be found in the Tinnevely and Ramnad districts, that is, the salt marshes, in the neighbourhood of which we have seen that, in the months of February, March and April last, the fever raged with more than common severity.

Sir John Pringle\* has told us that there is a peculiar kind of damp which rises at low water from a beach covered with slime, the more liable to corruption on account of the mixture of salt and fresh water. Dr. Jackson† has, however, disputed the correctness of this opinion. He says indeed that it would be vain to deny that the vicinity of lakes in which there is a mixture of salt water is often unhealthy, yet he affirms with confidence that it is seldom more so than when the lakes are altogether without this admixture; and he adduces proof in support of what he advances. Which of these opinions is correct we know not. In parts adjacent both to the briny swamps near Kilkerry in the Ramnad country and to those in the Punjmalal talook of the Tinnevely district, the epidemic was particularly destructive; but whether this may have been owing simply to the exhaling influence of the sun upon extensive marshes flooded to a very considerable degree, or in any measure consequent on the salt water they contained, we shall not venture to say.

We have now seen that three great remote causes have been assigned for remittent and intermittent fevers, all of which we conceive have contributed to produce the calamity which has proved so fatal in these fine provinces. But marshy situations do not appear of themselves to be sufficient to render such affections epidemic. To produce this effect there is required the superagency of a close, moist and sultry heat and an imperfect ventilation: hence it is that, in common years, there is not produced in many of the low situations we have particularized a miasma of sufficient malignity to excite the general disease, because in such cases the exhalation of superfluous moisture takes place during the cold months of December and January when they are comparatively innocent. But rains, falling out of season and in great abundance at periods when the weather had become hot, and when there was so distressing and un-

\* See Pringle's Observations on the Diseases of the Army, page 3.

† See Dr. Jackson's Treatise of the Fevers of Jamaica, pages 81, 28.

‡ See Dr. John Clark's Observations on the Diseases of Long Voyages, Vol. I., page 157.

§ See Pringle's Observations on the Diseases of the Army, pages 3, 4.

natural a deficiency of free ventilation in the atmosphere, occasioned vaporations of a very different nature and which, we conceive, became a positive source of mischief by bringing on that corrupt and stagnant state of the air which is ever closely connected with the decay, decomposition or animation of vegetable matter. Such an offensive condition of the atmosphere we have remarked in our Third Section, was but too often experienced in several of the low tracts of these districts during the sickly season. It was pregnant with most baneful consequences, and strongly recalled to our recollection the following paragraph of a well written paper which may be found in the Medical Repository.\*

"The cool refreshing northerly breezes were now exchanged for oppressive calms or for humid and sultry winds; such are the changes which the state and temperature of the atmosphere undergo in the islands of the West Indies and elsewhere, previous to the breaking out of some mortal epidemic."

Great deviations† from the natural order of climate, we are happy to think, do not very frequently occur in these regions; as in other tropical countries the seasons are pretty regular and steady, and strong winds blowing from fixed points keep the atmosphere in an almost perpetual state of agitation and of consequent purity.‡ We have seen, however, in the melancholy instance before us, that the very reverse of all this has lately happened, and has been judiciously noticed by Mr. Hepburn in a communication§ he made to the Medical Committee. We perceive that a nearly similar departure from the common course of the seasons took place in the Tinnevely province in the year 1757, as is mentioned by Mr. Orme in his "History of Hindoostan,"¶ and that it was followed by a like calamity. He tells us that in the month of March the south-west monsoon was so violent as to break completely over the Western Ghats and descend in vast floods into the Coromandel side of the peninsula, where the rains fell without intermission for two days, destroying crops just ready to

\* See Vol. I of the 2nd House, page 145.

† The native Indians also ascribe epidemic distempers to these unusual deviations from natural climate, as we learn from the Ganatzanorum, an astronomical shastrum, to be found in the Library of the Shiva Pargoda of Tencaashie in the Tinnevely district.

‡ See Zimmerman's Experience, Vol. II., page 145, English translation.

§ See No. 6, a paper which accompanies this Report.

¶ See his History, Vol 2nd, page 201.

be cut, sweeping away many of the inhabitants; and ultimately (by creating powerful evaporation during a sultry heat) producing an epidemic disease very fatal in its consequences.

With regard to the effects of the miasmata generated amongst woods and jungles, besides the testimonies already adduced, we beg leave to call the attention of the Board to what has been noticed by a very able writer\* on the Diseases of the West Indies (Dr. Fowle), who says that in the uncultivated tracts of those countries, where there is much rank vegetation, where the narrow vallies between the mountains, replete with moisture, are often not sufficiently ventilated, there is produced exhalations at any seasons bad, but particularly so after autumnal rains and sultry heats. He moreover adds that mighty torrents, by washing dead matter, animal as well as vegetable, into low swampy lands, where it is left to putrefy, not unfrequently prove the indirect cause of the most pernicious effluvia; and Zimmerman,† who paid much attention to the effects of air upon the human frame, is of opinion that in woody countries much mischief may not only arise from a deficiency of ventilation, but from the noxious qualities of the trees themselves, in support of which he mentions the bad effects well known to be produced by the poisonous exhalation of the Hippomane at Surinam.

Dr. Trotter in his "*Medicina Nautica*,"‡ adopting in a great measure the opinions of Priestly, tells us that growing vegetables are found by experience to purify the air; they add oxygen to it by decomposing the water of the atmosphere and the hydrogen goes to the nourishment of the plant. But this process, he adds, only takes place when there is the light and heat of the sun to assist in the operation. If this notion be just, how many thousand plants and shrubs must there be in the thick wood and jungles that by growing altogether in the shade cannot be supposed to purify the air. On the contrary, they may, by harbouring moisture and obstructing ventilation, prove productive of the most unsalutary vapours, requiring perhaps little else than the concomitants of decayed vegeta-

\* See Dr. Fowle's Practical Treatise on the different Fevers of the West Indies, pages xviii, xix, xx, and xxi. of the Introduction.

† See Zimmerman's Experience, Vol. 2nd, pages 140, 141, English translation.

‡ See Dr. Trotter's *Medicina Nautica*, Vol. 3rd, page 273.

ble matter and a close and steamy heat to induce that distempered state of the atmosphere which we suppose to be the remote cause of the malady in question—a cause, too, which there is but too much reason to believe was most amply supplied amongst the overgrown, shady, dark and ill-ventilated woods, valleys and mountains of the Dindigul, Pylney\* and Madura countries, as well as amongst those of that immense range which we have so often spoken of as dividing the peninsula.

By the experiments of the Abbé Nollet it appears that the electric matter has the power of accelerating the growth of vegetables, and Dr. A. Wilson† makes no doubt but that it promotes putrefaction in animal bodies. It may therefore here become a question how far this matter, which we have noticed was very abundant in the atmosphere during some of the most unhealthy periods, may not have assisted in producing a distempered state of the air.

The predisposing causes of remittent and intermittent fever are well known to be those that operate by producing debility, such as poor or insufficient diet, great fatigue, frequent exposure to cold and damp without proper covering, habitual inebriety, grief, sorrow and mental anxiety; in short, whatever exhausts or diminishes the activity of the powers of life; and hence it is in the present instance that we find the disease has invariably been most fatal in such villages as stand low, or in the vicinity of marshy lands, and amongst the poor‡ and hard working inhabitants, who are ill fed, badly clothed§ and miserably lodged. And perhaps this cannot be better exemplified than by our now stating that at Madura, in a period of sixteen months up to the 1st of April 1811, there did not happen one casualty amongst the troops at

\* The Pylney mountains have repeatedly been mentioned in this report as having been supposed, by a great majority of the natives, to be the positive source whence sprang the epidemic fever; but while there was one great cause (irregularity of seasons) operating so universally and extending to all the districts, we cannot suppose that there was but a single point whence the mischief was diffused; though we think it by no means unlikely, considering the peculiarly mountainous and woody nature of the Pylney division of the Dindigul country (where the hills are of an immense height and so deep as to join the Western Ghats) that the disease there may have attracted very early notice.

† See Dr. A. Wilson's Observations on the Influence of Climate, pages 18, 19.

‡ See No. 6, being M. Hepburn's answers to Queries which were put to him by the Medical Committee.

§ Malthus in his Essay on Population tells us that all epidemics make their principal ravages amongst the lower classes. See the work, Vol. 2nd, page 59.

that station, though the poor inhabitants of the garrison were very unhealthily during the same period. Again, at Dinigul out of three companies usually stationed there, but two deaths occurred from the 1st of March 1810 to the 30th of November of the same year, though the needy inhabitants of the town who were comparatively worse fed and clothed were dying by hundreds; and at Darampooram, while the epidemic was at its greatest height, the prisoners in jail who were well fed and lodged in a high, dry sheltered situation, suffered but in a trifling degree.

Supposing then that there exists in the atmosphere the remote cause of epidemic fever and that there has also been superinduced a predisposition to be acted upon by it, there are still another set of causes, termed exciting, which often hasten the approach of the pending evil. Perhaps the most certain of these are exposure to cold and damp, while the body has been relaxed by preceding heat and influence of ardent solar rays on an irritable frame.

The bad effects of the last are self-evident; the mal-influence of the first has been noticed by many writers of distinction, particularly by Pringle\* and Bursarius,† and it appears to have proved the certain source of incalculable mischief in these provinces, in which during the months of March and April 1811 the nights were extremely sultry and the dews, which by this time should have ceased to appear, still fell in great abundance. "The heat of the early part of the night" (says Mr. Hepburn in a letter‡ to the Revenue Board) "induced many of the natives to sleep in the open air, by which means they become exposed, while their bodies were still hot, to the chill fogs and damps of the morning, and which in all probability was the cause of the fever which ensued."

But if such fogs and damps can be productive of consequences of so serious a nature in our open country, it is but reasonable to suppose that in the neighbourhood of mountains thickly clothed with wood, they must prove still a more certain cause of evil; and so it is that we have in every instance found the epidemic most prevalent in situations close to hills, where, as Bontius § has justly observed,

\* See Pringle's Observations on the Diseases of the Army, page 72, 2nd Edition.

† See Bursarius' Institutions of Medicine, Vol. 1st page 280.

‡ Of date the 14th May 1811.

§ See Bontius' Account of the East Indies, page 100, English translation.

(when speaking of Batavia) there is but too often breathed, about the dawn of day, cold noxious vapours, the more certainly dangerous by their succeeding to the "tepid" warmth of the night.

## SECTION FIFTH.

*Nature of the Epidemic and its various types—The notions of the Vytians, or Tamil Medical Practitioners respecting it.*

The disease which has proved so fatal in the Southern Provinces does not differ in its nature from the common endemic of this country, which at certain seasons\* and in peculiar situations† may be every year met with; its having been rendered epidemic on the present occasion is altogether to be ascribed to the causes‡ we have already mentioned.

Pringle has told us that intermittents are "the great endemic of marshy countries," and that they rage most in hot summers during a close and moist state of the air; but he might as well have added "of a low and mountainous country" which are so well known in this part of the world to occasion the malady we now treat of, that in the more northern parts of Hindoostan it is called "the jungle fever," and on the Coromandel Coast "the hill fever."

This disease, as in the West Indies, is either remittent or intermittent according to circumstances of constitution, management of the patient or season of the year; but we are happy to say that the second is by far the most common. Delicate people of naturally irritable habits who have rendered them so by irregularities or want of care§ are sometimes attacked by the remittent form, which either proves bilious or nervous as the constitution inclines. The same happens to those who, with even a stronger frame of

\* The most unhealthy season in this district is from the time that the north-east monsoon rains cease to the middle of May.

† Such as amongst the hills in the Ganjam Circars, amongst those near Palavaram in the Rajahmundry district, &c., &c., &c.

‡ Dr. John Clark in his Observation on the Diseases of Long Voyages says, "remittent fever may occur at any time, but seldom rages epidemically except in close, moist and sultry weather."—See Vol. 1, page 157.

§ Some of the worst cases of remittent fever in Europeans we have known, appeared to have been brought on by habits of quacking and taking frequent calomel purges, than which nothing can be more injurious to the digestive powers nor more likely to predispose the body to receive fever.

body and phlogistic diathesis, have been injudiciously treated at the commencement of the disorder, by having bark given to them too freely before proper evacuations had been procured. And it has also been observed by us that, as the season became hotter, the fever was more apt to put on a remittent form than at an earlier period, while perhaps rains were falling and the atmosphere comparatively cool. In confirmation of what we have ourselves witnessed in this respect, we shall add that this peculiarity has also been called to our attention by a well written communication from Mr. Abercromby, Surgeon of His Majesty's 34th Regiment, to Mr. Boswell, Superintending Surgeon of the Hyderabad Subsidiary Force, and we find that both Hillary\* and Dr. Maclean† in their works on the Diseases of Barbadoes, and Lieut. Domingo have made similar observations.

The more robust have been usually seized with fever of the intermittent kind, and by every account we have received it appears that males have suffered more than females; and young and those of middle age more than old men and children.

The epidemic fever sometimes comes on gradually. The patient for two or even three days being confined to bed feels himself much out of sort, his appetite fails him, he has a slight squeamishness at stomach, particularly on seeing animal food; he complains of a feeling of universal lassitude and of alternate heats and chills; there is a stupid heaviness, if not a pain, in the head; the eyes are clouded, the ears ring and the bowels are invariably constipated. In other cases the approach of the enemy is more rapid; and rigors, great debility, vertigo, sickness at stomach or vomiting, sooner ensue and never fail to usher in the disease.

The first paroxysm, which is often attended with delirium, and is sometimes in young habits accompanied by a bleeding at the nose, after having continued for a certain period with symptoms varying according to the strength of habit and constitution of the sufferer, terminates in a sweat, not however of that profuse and fluent kind which succeeds to the hot fit of a regular ague, but clammy and sometimes indistinct. It however, has the effect of affording relief by considerably lowering the pulse and cooling the body

\* See Hillary's Observations on the Diseases of Barbadoes, page 91.

† See Dr. Maclean's Inquiry into the Nature and Causes of the Great Mortality at St. Domingo, pages 80, 87.

(which in many cases has been heated so high as to raise the thermometer to the 103rd or 104th degree) but neither the natural feelings of the skin nor the proper state of the pulse are thereby induced; the former gives a singular dry and uncomfortable sensation to the touch and the other is smaller and a little quicker than it ought to be; the patient continues languid and has but little appetite for food.

If proper steps are not now taken to bring on a regular intermission, or if from the violence of the disease it cannot be done, this first remission will not be of long duration,\* a paroxysm more severe in every respect soon ensues, usually ushered in by vomiting (in some cases of bile), and soon followed by excessive heat of skin, delirium, great thirst, difficulty of respiration and a most distressing febrile anxiety; and the tongue, which at first was only white and foul, now begins to look parched and brownish. The next remission, when it takes place, is less perfect than the first and brings still less relief, and in this way if a check cannot be given to the fever, or if (which they sometimes do) natural loose bilious evacuations do not occur to supply the place of diaphoresis, it will run on its fatal course, each succeeding attack proving worse than that which preceded it, till nature exhausted at last begins to give way. The pulse gradually loses its strength, the countenance shrinks and looks sallow, the eyes become dim, the abdomen swells from visceral congestions and the stomach loathes every sort of food. Shortly after this period hiccough comes on, an alarming stupor takes place of low delirium and death quickly closes the scene. But such remittents have not been very frequent in these provinces and, when they did occur, were, we believe, mostly occasioned by neglect or unpardonable blunders at the beginning of the disease.

The intermittent form of the epidemic is infinitely more common and much more tractable. Dr. Fowlet as well as Dr. James Clark† have told us that the rigor in such cases in the West Indies is not so great in proportion to the succeeding heat as it is in England. We cannot say, however, that we have observed any such peculiarity in this country. The cold stage§ here is often of long continuance and most

\* Not usually longer than from five to eight hours.

† See his Practical Treatise on the Fevers of the West Indies, pages 1, 2.

‡ See Dr. James Clark's Treatise on the Yellow Fever of Dominica, pages 92, 94.

§ Its duration is commonly from half an hour to nearly two hours.

distressing; vomiting often takes place at the beginning of the hot fit and is sometimes succeeded by delirium.

Agues (of all kinds) either commence at once with rigor, or a shaking fit, or they first shew themselves with a febrile attack more or less continued and usually of about two days' duration. This, on going off, by means of the usual remedies, leaves the patient for the most part tolerably well and he continues so for a short time, after which the fever returns and observes the type which is to distinguish it.

With regard to the question of how far this epidemic ought to be considered as contagious, we have no hesitation in saying that we believe it not to be so in any of its natural forms. Whatever might happen in cases which from improper treatment had been allowed to pass into low continued fevers, attended with the usual symptoms of putrescence, though even then it can never extend far in a country like this, where the heat of the atmosphere seems peculiarly inimical as well to its first production as to its spreading, and where the free admission of fresh air cannot fail quickly to break and dissipate the circle of contagion.

The types under which the intermittent has appeared are the following:—1st, simple Tertian; 2nd, the double Tertian, which would seem to consist of the junction of two single tertians that run each a separate and independent course, with similar paroxysms on alternate days; 3rd, Quotidian; 4th, Quartan; and 5th, Irregular. To show which of these has most frequently occurred amongst the natives during the present sickness, we cannot do better than here subjoin a report of the sick in the Regimental Hospital of Dindigul taken on the 1st of June 1811. The effective strength of the detachment being then 255 men.

| Simple Tertian. | Double Tertian. | Irregular. | Quotidian. | Quartan. | Convalescents. | Total. |
|-----------------|-----------------|------------|------------|----------|----------------|--------|
| 39              | 26              | 24         | 13         | 4        | 20             | 117    |

Of these 53 had been in hospital for one month, 39 for

two months,\* 23 for three months, and 2 for upwards of three months.

From the above it will appear that the simple and double tertian types were the most common at Dindigul; and we learn from Dr. Jackson\* and Dr. Cleghorn† that they were also those which were most frequently met with in Jamaica and Minorca.

Mr. Sinac has denied that there is any such thing in nature as a regular quotidian, and Dr. James Clark‡ says that he never saw a case of it in Dominica. We cannot, however, doubt of its existence in this country, where, on the contrary, when it does occur, it is almost invariably well marked with paroxysms returning at nearly equal periods, though the cold fit by no means continues so long as in the simple tertian. It is often a distressing affection from its commonly attacking those of weak constitutions; and, by leaving but little time for taking the bark, is perhaps apt sooner to occasion visceral obstructions and cedematous swellings than any other form of the disease.

The quartan type is rare, but we have invariably found it very obstinate and it frequently on that account brings on a morbid state of the spleen and consequent dropsy. Pierre Compet § in his "*Maladies graves de la zone torride*" makes similar observations. He says that in many instances in the West Indies this form of intermittent fever succeeds a tertian, when badly treated, by which means the morbid humor is thrown upon the abdominal viscera.

The irregular disease, by observing no exact periods, is very troublesome, and seems to us to correspond in its nature with what Hoffman has called "The Semi-tertian."

The types of the fever are sometimes changed during the course of the malady; the conversion of a remittent into a tertian is favorable to the patient, as is that of a double tertian into a single one. Tertians, on the other hand, are sometimes unfortunately (by mismanagement) turned into remittents, irregular or even continued fevers, as tertians into double tertians, quotidians or quartans.

The Vyteans or Tamil medical practitioners consider the epidemic fever chiefly to be caused by a

\* See Dr. Jac'

† See Clegh'

‡ See Dr. James' Dominica, page 67

§ See

the Fever in Dominica, p. 10

moisture in the air and earth and the bad quality of the water they have in consequence been obliged to drink. To intermittent fever they give the name of Seetajorum, or in more common language Cooloor Cajil. The most dangerous type, they are of opinion, is the Quotidian or Woodadajorum; but we are inclined to think that they often confound this with remittent fever, for which, however, they have got a particular appellation Tavajorum,\* which signifies a fever accompanied with excessive thirst. The Tertian type they distinguish by the name of Moonamoray jorum, and the Quartan by that of Nalamorayjorum. They allow this last to be of a most obstinate nature, and often have more faith in a change of season for its removal than in any medicine they can administer.

(To be concluded.)

ART. XII.—*Note on the Treatment of Bubo.* By Assistant Apothecary STAGGS, 76th Regiment.

WITH the kind permission of Surgeon W. F. Cullen, H. M. 2-24th Regiment, I have been allowed to report the following method of treatment, generally adopted in cases of inflamed glands (inguinal) in the hospital of that corps.

The treatment consists in transfixion by means of an ordinary exploring needle and the subsequent inunction of Unguentum Hydrargyri into the bubo. When a patient presents himself at the hospital with inflamed glands, from whatever cause, he is allowed to rest for a few days; measures are taken to improve his general health if indifferent; and, in the meanwhile, hot fomentations and poultices are applied to the part. At this period, in most cases, suppuration is evidenced by fluctuation, &c.; but even should this not supervene, an exploring needle is introduced *just under the skin*,

extent of lach at four points, crucially.  
result of e more oozing out of a little  
pain: d by the patient during  
le m. ent (about 3ss.) is now  
nds: f the gland morning  
result after a few days,  
the tumour is

now, which the  
forget the Hin.  
the venge.

noticed: at all events, at the end of a fortnight, usually from date of operation, the patient is considered fit for duty. It has been found necessary in some instances where the decrease proceeds somewhat tardily, to repeat the operation a second and even a third time, before total disappearance of the swelling is observed.

This plan of treatment has been found very generally successful in this hospital, and its advantages over the almost stereotyped one of "opening a bubo" with the knife during the suppurative stage, are, that it does not produce any intractable sinuses, or open ulcers, which often lay the patient up for months before an actual cure is effected; nor does it leave any ugly cicatrices after the healing process is completed.

I trust the above is sufficiently novel and interesting to warrant its publication in the *Madras Monthly Journal of Medical Science*. I have been induced to send this for publication with the view, simply, of giving the practice of treating inguinal glandular swellings, as obtaining in the 2-24th Regimental hospital, a more extensive trial.

ART. XIII.—*A Rejoinder to Dr. Macnamara's Defence of his Scheme of Water Analysis.* By EDWARD NICHOLSON, F. C. S., Assistant Surgeon, R. A., Analyst of Waters, Mysore, Northern and Ceded Districts.

SUCH very important issues depend on the settlement of the question I have raised as to the value of Dr. Macnamara's scheme of water analysis, that I need hardly apologize for taking up the space of the Journal with a rejoinder to his defence. The Bengal reports of water analysis represent an outlay of considerably over a lac of rupees, and it is of some public as well as scientific interest to know whether it is likely that further outlay under this head will be wasted as before, or whether there is any chance of its being judiciously expended.

The facts of the case are that Dr. Macnamara was entrusted with the superintendence of the Bengal system of water analysis, carried out by his own scheme; this went on for four years, previous to the 1st of January 1871, more, during three years of which time it was under Macnamara's direction. During his absence at his scheme as far as the chemical

part of it, availing himself of the suggestions of English sanitary authorities, and he has caused it to be imposed on all Indian analysts. Certain processes are laid down, being considered those best suited for the "dāk bungalow or spare barrack room," and they are consequently enforced by the executive authorities. "The aim of the compilation is to serve as a guide to the detection of danger in the special form of contaminated or impure water."

My case against Dr. Macnamara's scheme is this. That if the first scheme was bad, and the deductions from it erroneous and often mischievous, it had the redeeming quality of simply ignoring chemistry. Its defects were patent. But the present scheme, while equally devoid of any traces of chemical experience in the compilation, is of a highly pretentious character and might easily impose upon persons not practically acquainted with chemistry. It is a patchwork of book processes, and I look in vain for any traces of the experience one would expect in a scheme compiled after three years' superintendence of Indian water analysis. I brought forward evidence in support of my assertions. Dr. Macnamara's defence may be brought under three heads:—

1st.—That he is not solely responsible for the scheme.

2nd.—That the processes he gave are sound, but he owns to having compiled them principally from text-books of analysis, and to having omitted to verify by experiment their exactitude and their applicability to the circumstances of Indian water analysis.

3rd.—He disclaims responsibility for the condemnation of the Hurri-pore and Meeran Meer waters, it having been passed by his substitute.

I shall not open any new ground, but confine myself to the above points, only giving on the third point such evidence as will show that the condemnation of the above water was strictly in accordance with Dr. Macnamara's principles.

1st.—As to the responsibility of Dr. Macnamara for the scheme it cannot be for a moment that, the scheme having been submitted to him, and Angus Smith, he, its originator, is at all responsible. In default of any evidence as to his criticisms and suggestions he received from others, it may be assumed that they would take the scheme originated by the Chemist.

Government of India after three years' superintendence of Indian water analysis. However this may be, the scheme appeared under Dr. Macnamara's name, and he is clearly responsible for it.

2nd.—Regarding the chemistry of the scheme, Dr. Macnamara retorts that the charges of want of practical experience must recoil on my own head. I am so little afraid of this, that I will add not a word to what I have already said, and will content myself with rebutting by a few facts his quotations of authorities on the process for the determination of alkalies. Dr. Macnamara has agreed that his scheme shall stand or fall by the truth or otherwise of his statement, and I hold him to his agreement. If I were wrong I would openly renounce calling myself a chemist. I expect that Dr. Macnamara on receiving proof that he is wrong will renounce his scheme in the fullest sense. The statement may be thus taken in Dr. Macnamara's own words (page 426): "But if the alkaline sulphates are present in only small amount, this conversion [into chlorides] may be more conveniently brought about by the addition of chloride of ammonium to the solution, for on evaporation and subsequent ignition, the ammonium carries off the sulphuric acid, leaving the chlorine in combination as chloride of sodium or of potassium."

This is the statement which Dr. Macnamara maintains. I will proceed to prove it unfounded in fact. Authorities are of no account in questions of fact; an error occurring in one text-book is often copied into another, as the compilers of such comprehensive manuals cannot personally verify every one amongst the large number of processes mentioned as available.

It must be remembered that the question is not whether some chloride is or is not formed, whether in an experiment I shall or shall not "find in the residue abundance of chloride of sodium," the question is whether what can be fairly called a small amount of sulphuric acid can be expelled (that is to say, totum or nearly totally expelled) by ignition with chloride of ammonium. I am free to own that a certain minute proportion of chloride is formed—a proportion so minute that operating on small amounts of salts, the trace observed is undeterminable, and it is only by taking comparative quantities that I was able to determine the amount. It exceeds 3 per 1,000 of the sulphate operated on, in five ignitions (operating five times

successively with large excess of ammonium chloride and a sufficient amount of water) failed to produce 1 per cent. of change. The reasons why this occurs and why the proportion must always be minute, I cannot here enter into. Suffice it to say that my counter-statement that no chloride is formed requires to be modified to the extent of 3 in 1000; complete accuracy being represented by 1,000, my statement was accurate to the extent of 997 parts out of 1,000.

But this is not the real point. If 10 or even 50 per cent. of sulphuric acid were expelled, Dr. Macnamara's statement would still be wrong; the sulphuric acid must be *carried off, i. e.*, at least 90 or 95 per cent. of it expelled and replaced by chlorine. The following experiments are conclusive on this point.

(a.)—*Experiment with pure salts.*—0.0324 gram. of pure sodium sulphate was mixed with 0.0500 gram. of pure sodium chloride (to assimilate the experiment to the actual process on the mixture of alkaline salts obtained in operating on a water containing a small amount of sulphates). To this mixture we added 0.0840 gram. (more than the proportion advised by Dr. Macnamara) of pure ammonium chloride, and a sufficiency of distilled water for perfect solution. The residue obtained by evaporation on the water-bath was ignited and dissolved in water; the sulphuric acid was determined in it and in an equal quantity of the original sulphate. The results were—

Original sulphate..... 0.0222 gram.

Residue of experiment..... 0.0221 "

Theory..... 0.0219 "

Showing that there was practically no loss of sulphuric acid, the deviations from the theoretical amount being in both cases well within 1 of allowable error.

(b.) *Experiment on waters of Wabair that :* sulphates; the actual amount called small, and I operated 453 c. c., so as to have as much acid as possible to expel. The extraction of sulphates was conducted in strict accordance with the process indicated. The residue of what should have been soluble chlorides amounted to 0.1114 gram. was silica; the soluble portion was sulphuric acid. In an equal amount of sulphuric acid originally existing

—I selected amongst the waters the least amount of sulphates; also what may be fairly called a small quantity of water, and I operated with as much acid as possible to expel. The extraction of sulphates was conducted in strict accordance with the process indicated. The residue of what should have been soluble chlorides amounted to 0.1114 gram. was silica; the soluble portion was sulphuric acid. In an equal amount of sulphuric acid originally existing

with the scheme; the amount was 0.0112 gram. per litre, showing that the sulphuric acid was not expelled by the ignition with ammonium chloride. It had apparently somewhat increased; this is explained by the process for the sulphuric acid yielding an amount rather too low, owing to barium sulphate being not altogether insoluble, and some being held in solution when sulphuric acid is precipitated in an unconcentrated water as ordered in the scheme. The amount of sulphuric acid to be expelled by ignition with ammonium chloride was only five milligrammes, yet so far from its being expelled, I was actually able to determine it more accurately in the ignited residue than in the 453 c. c. of unconcentrated water.

3rd.—I assert that the Bengal water analyses and the results deduced from them by their superintendent inspire profound distrust of his capacity for dealing both with the chemical and hygienic aspects of water analysis. They also are fatal to any assertion that medical officers are qualified by a zealous pursuit of the Netley course of Hygiene, for undertaking analyses of waters.

If there is one branch of hygienic examination more insisted on, or more patiently taught than another at the Army Medical School, it is the examination of water by means of the soap test. Without entering into the principles of the soap test, I will only remind my readers that every degree of permanent hardness means somewhat more than one grain of earthy 'soluble' salts (magnesium or calcium chlorides, sulphates, nitrates, &c.), whilst each degree of removable hardness means about one grain of 'insoluble' earthy salts (calcium and magnesium carbonates and silicates). It will be sufficiently accurate to say that each grain of insoluble earthy salts (after deduction of any silica) represents one degree of removable hardness, and more, often much more, than one degree of total hardness, as this is the hardness of the 'insoluble' earthy salts, or any 'soluble' earthy salts, and of the free carbonic acid present.

Now one of the most peculiar things about the Bengal analyses is the general inability of all the analysts but one to rise above the figure of the soap test. Waters may contain 20 or 30 grains per gallon of 'insoluble' earthy salts, to say nothing of 'soluble' earthy salts, yet before the soap test marks 1 it appears to break down. Lest it should be said that this is the work of "some bungler," I remind that Dr. Macnamara himself ap-

pears to be equally weak in the soap test and to have wasted his soap as freely as any of the analysts. There are not many of his analyses complete. I have, however, found a page of them in the fourth volume of reports, and I extract from it the following figures—every analysis in which the degrees are given being set down.

|                                    |     |      |      |     |      |     |     |      |      |     |     |
|------------------------------------|-----|------|------|-----|------|-----|-----|------|------|-----|-----|
| Total hardness, degrees ...        | 5.2 | 6.1  | 9.8  | 5.4 | 4.2  | 1.8 | 4.1 | 6.8  | 5.4  | 1.9 | 3.4 |
| Insoluble earthy salts, grains ... | 6.0 | 29.0 | 14.5 | 6.0 | 5.95 | 2.0 | 3.5 | 17.1 | 14.0 | 2.4 | 4.6 |

(Silica was 'traces' or none throughout.)

The figures speak for themselves.

Of the few amongst these analyses that are complete, I quote two *in extenso* with the remarks.

|                                                            | Well in the Fort near Chowringhee Gate Road. | Well in the Fort near the Treasury Gate. |
|------------------------------------------------------------|----------------------------------------------|------------------------------------------|
| Physical properties ...                                    | Good                                         | Good                                     |
| Reaction ...                                               | Alkaline.                                    | Alkaline.                                |
| Total hardness, degrees ...                                | 6.1                                          | 9.8                                      |
| Permanent do ...                                           | 4.6                                          | 1.8                                      |
| Removable do ...                                           | 1.5                                          | 8.0                                      |
| Grains of oxygen required for organic matter of 1,000 grs. | .00019                                       | .000125                                  |
| Ammonia ...                                                | ...                                          | Present.                                 |
| Nitric acid, grs. per gallon...                            | 2.0                                          | 1.0                                      |
| Total solids do ...                                        | 67.6                                         | 38.0                                     |
| Volatile matters do ...                                    | 1.6                                          | 1.5                                      |
| Mineral do do ...                                          | 66.0                                         | 3.65                                     |
| Earthy salts, &c., inso. grs. per gallon                   | 29.0                                         | 14.5                                     |
| Lime calculated as carb., per gallon ...                   | 18.0*                                        | 10.0†                                    |
| Silica, grs. per gallon                                    | traces.                                      | Traces.                                  |
| Soluble salts do                                           | 9                                            | 22.0                                     |
| Chloride of sodium do                                      |                                              | 12.5                                     |
| Sulphate of soda do                                        |                                              | 3.6                                      |
| Carbonate of soda do                                       |                                              | ...                                      |

\* 18 grs. of calcium carbonate g

† 10 grs. of calcium carbonate g.

the hardness, ass.

Remarks (page 29 of Report.)

*Well in the Fort near Chowringhee Gate Road.*—It is a properly constructed well, having an efficient parapet, platform and drain; it is 41 feet deep and contains about 6 feet of water. The water is used by the sepoys and camp followers, but not nearly so much as formerly, for with few exceptions, the men greatly prefer the water from the neighbouring stand-pipe. Forty-eight feet from the well is a bazaar and the sepoys' quarters are close at hand; no doubt their neighbourhood and the constant washing that goes on, not only of bodies but of cooking utensils, in the vicinity of the well, is the reason of the impurity of the water. The water contains 67.6 grains per gallon of solid matters, including 20.5 grains of common salt. The sepoys consider the water to be of good quality.

*Well in the Fort near the Treasury Gate.*—This well is also properly constructed; it is 29 feet deep and contains about 4 feet of water. The well is now chiefly used for ablutionary purposes and only to a slight extent as a drinking water. There is no bazaar or other permanent source of pollution in the neighbourhood of the well, yet the water contains a rather large amount, 38 grains to the gallon, of solid constituents, including 12.5 grains of common salt. No doubt much of the saline matter in the well is derived from the washings of sepoys' bodies and cooking utensils. This water is considered by the sepoys very good.

Let us now examine how far the analysis justifies Dr. Macnamara's conclusions. Let us take the second well; the criticism is the same on both. There is a water condemned as containing the saline matter from men's bodies and from cooking utensils; how far does the examination of the water justify these assertions? *There is not an atom of evidence to justify the assertion.* The water is, to a very slight extent, brackish; the presence of sulphates in ample proportion & the chlorides is good evidence of the latter being caused by a slight admixture of marine salts with a naturally pure water; the amount of organic matter as measured by the permanganate test is about the minimum; quantity of nitric acid much less than usual in India oil waters; the presence of ammonia is a trivial circumstance (the first well contained none). There is no source of sewage contamination near.

But Dr. Macnamara with two years' experience of Indian water analysis, still laboured under the idea that nitric acid is always a product of animal pollution and that an excess of chloride is owing to the same cause. He finds a small amount of nitric acid and an excess of chloride, and at once jumps to the conclusion that the wells are contaminated by human and kitchen refuse. He has before him the fact that there is no possible source of sewage pollution in the neighbourhood, that the well is of good construction so as to keep out direct surface infiltrations, that the physical properties of the water are good, that the amount of organic matter is nearly the minimum possible, that the proportion of sulphates accompanying the chlorides is as nearly as possible that occurring in sea-water; but he has no eyes for these facts; he sees nothing but nitric acid and the chlorides, and the well is condemned. A pretext is, of course, required; it is readily found. A sepoy not far off is perhaps washing his brass vessels or even throwing a pot of water over himself; accordingly "no doubt that much of the saline matter in the well is derived from the sepoys' bodies and cooking utensils."

The fact is that Dr. Macnamara then as now took his chemistry and his hygiene out of an English book. He had seen it stated that in England nitrates when existing in any quantity are generally the oxidized products of sewage contamination; he did not reflect that, possibly in India, the great producing country of nitre, the occurrence of nitrates in waters may be quite normal; he did not think of ascertaining by experiment whether such might not be the fact, but he bows at once to "the authorities" and condemns every Indian water that happens to have nitric acid in it. Speaking of the excellent spring water of Murree (page 32 of same report) he says, "the springs being fed by the surface drainage which sinks into the soil of the hill, of course a considerable amount of surface matter mixes with the water, and becoming oxidized is presented by the nitric acid which is present in it. The waters, of most excellent quality, happen to contain a small amount of nitric acid, estimated at one grain per gallon. Accordingly they are declared to be polluted by it."

Such mistakes might be expected from a man, brought up in England, imbued with the 'contamination' theory; but to find them perpetuated by a man with two years' systematic analysis

must out from the 'contamination' theory; but to find them perpetuated by a man with two years' systematic analysis

might have been expected to learn something by experience during his campaign against the potable waters of Bengal; he appears to have learnt nothing. With a blind reverence for "the authorities," he made not the slightest use of the splendid opportunities before him; with unquestioning faith in home theoretical views, facts seem not to have existed for him; with an apparent incapacity for appreciating what is evidence, he condemned good waters wholesale. He now publishes a scheme which shall "aid professional chemists who might be employed in analyzing waters in India" and "serve as a guide to the detection of danger in the special form of contaminated or impure water."

In conclusion I cannot but express my regret at having to speak strongly on this subject, but any milder criticism might have served as an excuse for amendments in a scheme fundamentally bad. I render every justice to Dr. Macnamara's labours in the superintendence and compilation of the Bengal analysis; had his zeal been well directed, most valuable results would certainly have been obtained.

#### ART. XIV.—A Case of *Enteric Fever*. By Assistant Apothecary H. Judge.

August 8th, 1869.—Peter John C——, Æt. 19, service 1 year and 8 months, European of H. M.—Foot, an ordinary built man, of bilious temperament, was admitted into hospital on the 7th instant, suffering from fever of four days' duration. The attack was ushered in by rigors, and a general sense of chilliness, alternating with flushing of the face and heat of skin. This was quickly followed by pain in the head, loss of appetite, great thirst and spontaneous diarrhoea; dejections bilious.

Appears this morning somewhat prostrated and inclined to be drowsy. Skin of a bright heat; pulse full and quick; tongue foul and dry. Complains of tenderness on pressure over the left iliac region, and there is also some irritability of stomach present.

|          |                   |
|----------|-------------------|
| R. Quinæ | ℥ i.              |
| Liq. A.  | ℥ i.              |
| Pot      | gr. xxxii.        |
| S        | 3 iss.            |
|          | more ad. 3 vi. M. |

Ft. Mist.

A fourth part every three hours.

P. Ipecac. Co. gr. x. h. s.s.

Body to be sponged with tepid water. Blister to nape.  
Beef-tea diet.

Two pints lime-juice.

9th.—Diarrhoea severe during the night and some hæmorrhage from the nose occurred. Complains of soreness in the head; pulse not so strong; tongue brown and dry; is inclined to eat a little.

Cont. mixture.

R. Cupri Sulphatis

Ex. Opil. aa ½ gr.

Ex. Gentianæ q. s.

M. Ft. pil. i.

Four times during the day.

Beef-tea diet.

Beef-tea 1 pint extra.

Milk 1 pint.

Eggs 4.

Port-wine 6 oz.

Vespere.—Great tenderness over the whole abdomen.  
Diarrhoea less.

Turpentine stupes.

P. Ipecac. Co. gr. x. h. s.s.

10th.—Expresses himself as being 'about the same way.' Slept well during the night. Diarrhoea still persists, and the evacuations have assumed the characteristic ochre colour. Tongue becoming browner, though clean and red at the tip and edges; pulse still vigorous; fever continues; a few rose-coloured spots are visible on the abdomen. 8th day of disease.

R. T. Kino 3 iss.

T. Catechu ʒi.

Acidi Gal.

Aq. Cinnamo

Ft. Mist.

A third part

R. M. Diapho

Three times a

Tepid spon

Cor

11th.—Was wakeful during the greater part of last night, and is a little wandering in mind this morning. Pulse feeble, quick; tongue becoming darker and drier with incrustation of sordes on lips and teeth. Diarrhoea continues. A fresh crop of spots have appeared on the abdomen, and a few on the upper extremities.

Cont. Astringent Mix.

Lime water to be added to milk, 1 to 4 parts.

Abdomen to be covered completely with spongio-piline wrung out of warm water.

Diet same, with extras.

12th.—States he feels very bad this morning. Had short snatches of sleep during the night, waking up at intervals and getting out of bed; diarrhoea yielding; motions of a darker colour; takes his food and wine well; tongue still brown and dry; skin not so hot; pulse good. Epistaxis occurred again yester afternoon, but not to any extent.

Cont. Med. and Diet.

13th.—Looks better this morning; slept tolerably well during the night; appetite not so good as previous days; pulse fuller and slower; skin much reduced in temperature, and tongue smooth and moist. Irritability of stomach set in again yesterday and still continues. A recurrence of epistaxis yesterday.

Cont. omnia.

14th.—States he feels better; apparently improving; slept well; no delirium; bowels moved only once. A fresh crop of spots seen over left hypochondrium. There was a marked exacerbation of the fever last evening with a remission of the symptoms this morning. Still some tenderness over the abdomen; tongue moist and not so brown.

Cont. nourishment as before.

Three drops of Dil. Hydrocy. Acid for a dose in mucilage when sickness of stomach occurs.

15th.—Very restless during the night; moaned a good deal; expression countenance this morning very vague; eruption well marked on thorax; bowels moved thrice last night, not still yellowish and fluid; tongue cleaning; pulse slow moderately full. Great anorexia present, but storm irritable.  
ring. mix.  
with milk.

16th.—Passed a very restless night. Refuses nourishment of every kind, and is emaciating in consequence. Pulse keeps good; tongue moist, cleaning; eruption fading.

Cont. Om.

P. Ipecac. Co. gr. x. h. s.s.

17th.—Feels much refreshed this morning after a good night's rest, and expresses himself a deal better. Speaks quite rationally. Skin acting well. Emaciation progressing; tongue dry but clean; sordes have disappeared, and there is now no tenderness whatever over abdomen.

Cont. Dover's powder at bed-time.

18th.—Progressing favourably; slept poorly last night but very well during the day; skin warm; tongue clean; pulse fuller and slower; appetite variable; fever declining.

Cont. as before.

Brandy 3 oz.

Soda water 2 bottles.

19th.—Doing well; takes his food better, and is gaining strength; pulse good; skin cool; no diarrhoea.

Cont.

20th.—Improving daily; appetite returning; tongue keeping clean and moist; eruption has quite faded on the abdomen those on the chest still visible, though of faint colour; countenance more natural and becoming more solicitous as to his state.

Nil.

21st.—Had a good night's rest, and looks very well this morning. No fever; bowels rather sluggish; eruption has nearly quite disappeared; a few spots only remaining visible on the chest; tongue clean; skin natural; pulse good.

R. Ol. T

3 ss.

T. Rh.

3 i.

Aq. Ci

3 i. M.

F. hau

22nd.—Steadily improving; appetite better; sleeps cool. Complains this morning of knee-joint, which presents no call for direct treatment.

Flannel roller

scarcely perceptible; acting; skin in the left abnormal to

23rd.—Fever has declined entirely; no eruption whatever visible; is gaining flesh; bowels regular; tongue clean and moist; sleeps fairly and appetite good.

Nil.

24th.—Passed a fair night; skin a little warm; pulse normal; motions healthy.

25th.—Patient slowly but steadily convalescing. No febrile symptoms.

Nil.

28th.—Doing favorably; gaining strength.

September 4th.—Has continued to progress favorably since last report without anything special to note.

12th.—Doing very well, and picking up flesh.

Nil.

20th.—Quite well.

Discharged.

Remarks.—Doubtless hardly one of the medical profession would read the above case without being struck at an entire absence of thermometrical observations and registrations of the pulse and respiration—data so invaluable in diagnosis in enteric fever. But I must apologize by stating that the omissions have arisen not from any want of pains in case-taking, or observation at the bed-side, but from the bare fact that there was no thermometer in the hospital at the time, and that in the absence of information derivable from such a source, I thought it unnecessary to detail points of minor importance, that is, viewed *diagnostically*. I trust, however, the case will not be uninteresting, inasmuch as it faithfully exhibits the symptoms and progress of so formidable a disease as that under review.

## THE NATIVE ARMY IN 1870.

The Medical and Sanitary Report of the Native Army of Madras for 1870 is one that will repay perusal. It has, however, the universal fault of Government blue books in being not only large, but larger than there is any occasion for. It fills 125 folio pages, 120 of which consist of closely printed matter, the remaining 5 being devoted to statistics.

The main bulk is occupied by the annual reports of executive medical officers or large extracts from them. Many of these are, to use the words of one of the administrative officers, barren of interest. This being the case, one wonders why they are published. They contain nothing new. Some of these reports fill three or four pages, and even those reported to contain nothing of interest have a page and a half devoted to them. No one cares to read year after year that the huts in any given station are too small and over-crowded; that the state of the drains in the lines is most unsatisfactory, and that the smells arising therefrom are most objectionable: that each sepoy continues to have his own latrine in his own little court-yard, and that he is not at all particular in getting it cleaned out: that the water-supply is still very different, and so on. Of course it is all right as far as the duty of each Regimental Surgeon to mention these things in his annual report to his immediate superior, and the latter may consider it advisable to forward them to the Headquarters Medical Office, but there is no necessity for hampering the pages of the Report of the Army with them. It is more regiments in one st-

similar doses of the "climate," and "diseases of the district," and "state of the crops," and "natural features of the surrounding country," &c., &c., all in the same volume. The reader must be very patient, and must have more time at his disposal than is common in this country, who is willing to go through all this. In some of the executive reports there are Medical cases, and long accounts of malingering sepoys. We think that if these were worth printing, their proper place would be the pages of this Journal, where also they would have a better chance of being read and appreciated. Our opinion is that any new or useful information contained in the Regimental reports might very well be embodied in the Administration Reports of the Deputy Inspector Generals. We would thus have a very readable pamphlet of forty or perhaps fifty pages.

Having ventured to state what we consider to be the defects of the Report, we have much pleasure in drawing attention to some of its great merits. Chief among these are the "Diagrams to illustrate the chief meteorological phenomena and the fluctuations of the principal forms of sickness amongst Native Troops, during each month of 1870 in the stations of Madras, Bangalore, Secunderabad, and Trichinopoly." These are perfect models. By means of coloured bands and shading one sees at a glance the direction of the prevailing winds, the average height of the barometric column, the rainfall, the atmospheric humidity and the mean daily range of temperature for each month in the year. Coloured lines readily indicate the mean temperature, the general sickness and the prevalence of diarrhoea, dysentery, fever and malarial fevers throughout the year. With so much information thus condensed there is no confusion. And all is laid down with beautiful clearness. With reference to these Mr. Balfour writes that "it is" and "continue these illustrations

from year to year in future Reports, as they will form graphic permanent records of the health and climate of head-quarter stations, and may, in course of time, throw additional light on the influence of the elements of climate singly or collectively, on health." It is almost impossible to suggest any improvement on these diagrams. A band or line indicating the velocity of the wind might perhaps be added with advantage. Seeing that the thermometer in the shade in May rises to  $108^{\circ}$  in Secunderabad, while the air is at the same time excessively dry and the rain-fall almost nil, one would be glad to see at the same time what the velocity of the wind is likely to be. A fresh breeze with cuscus tatties would make the place tolerable to live in. On comparing the different diagrams, difference of climate and disease are very obvious: for example the small mean daily range of temperature in Madras as compared with Secunderabad, and its large proportion of atmospheric humidity as compared with Trichinopoly. Turning over the pages of the Report we come to a map of Mysore showing the prevalence of cholera according to a plan adopted by the Sanitary Commissioner, the comparative prevalence of the disease in the several districts of the province being indicated both by deepening shade of colour and by figure giving the death rates per 10,000 of the estimated population. The Report of the Deputy Inspector General of the Mysore Division is well characterised by Mr. Balfour as able and interesting. The last chapter of it, headed "Regimental" contains abundant remarks on the Regiments and Hospitals under his charge. So full are these reports of the Medical Officers, we think the reports of the Medical Officers, might well have been left out as they are to the vexed question of the sp

king writes that "the disease in fact moved so capriciously that it is impossible to say whether it was propagated along the main line of intercommunication or by prevailing winds." A perusal of this Report shows only too plainly that very little of any material consequence has yet been done to improve the sanitary condition of the Madras sepoy. The native lines are merely "drained by open ditches" which absorb filth and are sources of disease, and, as Mr. Ranking writes, "until drainage and sewerage of our cantonments and lines of regiments is effected by impermeable drains, it is scarcely to be expected that any material reduction will be effected in diseases of the diarrhoeal type." Then there is no guarantee that the sepoy drinks sound water. He gets it as he may from uncovered wells and tanks in the neighbourhood of his lines.

The Surgeon of the Sappers and Miners in Bangalore has obtained some novel results in Vaccination. "In 108 vaccinations of sepoy who had marks of previous small-pox, 84 were successful: in 98 who had good marks of previous vaccination, 77 proved successful; and of 67 men who had marks both of smallpox and previous vaccination, 44 were successfully re-vaccinated. These results are contrary to ordinary belief, to say the least of it, and we are glad to know that the Inspector General has ordered a repetition by others of the experiment.

On the subject of Fever there are some interesting remarks in the Report of the Deputy Inspector General at Secunderabad. He writes that the prevailing fever there appears to be due to cold and wet rather than to malarial, as it is most common after the south-west monsoon has fairly set in and the ground is soaked with rain, and it usually yields to simple evacuations and salines followed by tonics, without the aid of quinine. One of his suggestions, for these reasons, to

class 273 cases of fever that occurred in his Regiment under the heading Febricula. His superiors, however, replaced them under Fever, remittent and intermittent, on the ground that "no line can be drawn between them and the more regular form of ague." This is a subject that has yet to be worked out. This difficulty in naming many cases of fever occurs in other stations besides Secunderabad, Madras for example.

In 1870 the rainfall was generally above and the temperature below the average. Crops were abundant, and the sepoys had consequently plenty to eat. The strength of the army was about 31,000, of these about four-sevenths were Hindoos, three-eighths Mahomedans, and the remainder, about one-sixteenth, Christians. The health of the army was about the average. The ratio of treated to strength was 11.10 per cent. The corresponding ratio for prisoners during the year was 73.5 per cent., whilst that for European troops throughout the Presidency amounted to 148.15 per cent. The total mortality during the year was 111, or about 13 per 1,000 strength. There were very few deaths from cholera. The sickness and mortality varied within very wide limits in the different divisions in which the troops were stationed. Thus the Southern Division was the healthiest, with a ratio of sickness to strength of only 36 per cent., and a mortality of 8 per 1,000, while in Hong-Kong the percentage of sick was 138 and the mortality 30 per 1,000. The most unhealthy command on the continent was in which Madras troops were serving, in the Bengal Presidency. The great diurnal variations in temperature which have proved very trying to the Madras troops, and the chief cause of sickness in the various types. The climate is a trying one for Madras.

"influence, as also the low winter temperature, 52° Fht., and the great annual fluctuations of the thermometer amounting to no less than 33.5° Fht. "The diseases from which the 29th Regiment chiefly suffered there during 1870, were fever and bowel complaints. In the moist relaxing climates of Pegu, and the Andaman and Nicobar islands, and in the Straits also, the health of Madras corps rapidly deteriorates; dysentery, diarrhoea and rheumatism being the most common complaints."

### FOOD IN BESIEGED PARIS.

M. Bouchardat has published in a French periodical a short paper *De l'alimentation azotée pendant le siège de Paris*, which contains some of the results of very exceptional experience in the matter of animal food. The two points to which he calls especial attention are; (1) the quantity of nitrogenous food necessary for the support of life, and (2) the modifications produced in the excretions and the flesh of animals by a radical change of diet. When the question of rationing the population arose, the author put forward the proposition that it is easier to preserve health, during a remarkably long period, under a reduced supply of nitrogenous or plastic food than when calorific alimenter is diminished; this being especially true when the weather is very cold. He did not, of course, apply this principle to the case of adult males under physical exertion, the soldiers engaged in the city for instance. A dietary was enjoined. The food, generally laid down for the maintenance of life, contains 21 grams (324 grains) of nitrogen. Bouchardat seeks to show that this is necessarily large and that less

may be supplied for a considerable time, provided that the calorific element of the food be sufficient and properly regulated in amount. Thus 100 grams of meat in its ordinary condition contain approximately 3 grams of nitrogen. If nothing but meat is eaten, therefore, 700 grams would be necessary in 24 hours in order to supply 21 grams of nitrogen. About two kilograms of bread would be required for the same purpose; or, if the diet be mixed, 1 kilogram of bread and 350 grams of meat. Experience seems to show that nitrogenous food is in excess in such a dietary. Previous experiments had shown the possibility of a carnivorous animal's living for more than a year on food so little azotized as beef-fat with cellular tissue: and clinical experience corresponds with the conclusion thus indicated. Cases occurred in which the stomach rejected all food except milk. The patients were put upon a diet consisting exclusively of cows' milk and kept on it for two or three months, the mean daily supply being three litres. Not only did they not lose weight under this regime, but they recovered strength and condition. Now a litre of milk contains about 30 grams of nitrogenous matter (casein, albumen, &c.), and 3 litres supply only 15.5 grams of nitrogen instead of 21. "During the siege we were reduced to a ration of 60 grams and subsequently to 30 grams of horse-flesh; I confess we lost a few kilograms in weight, but the health of vigorous persons not exposed to other privations (especially cold) was unaffected."

If the proportion of albumen necessary for the daily food be calculated from the amount of nitrogenous excretions, it will appear that the quantity of the latter may be diminished considerably by changes in the food without affecting health. In Paris a man in health, suitably exercised, excretes between 25 and 30 grams of urea in 24 hours.

several persons who had come to Paris from tropical climates (Brazil, Java, &c.) was examined and yielded no more than 15 grams the quantity sometimes being so low as 12: the diet corresponding to these amounts, and the foreigner being in good health. After from four to six months' residence in Paris the proportion of urea rose. These facts clearly show that the amount of nitrogenous food daily taken may be diminished without ill effect. The author has also arrived at the conclusion that many men who are in the decline of their vigor ought to reduce the amount of albuminate food when not engaged in severe physical work and when the respiratory movements are becoming languid, so that the volume of air passing through the lungs is sensibly diminished. Under such circumstances the abuse of nitrogenous aliment gives rise to numerous diseases. Digestion is disturbed. The breath becomes offensive and many chronic affections of the digestive organs are set up or slowly aggravated. If digested and absorbed, the nitrogenous matter, when excessive, forms unhealthy products in the blood and in the organs, sodium urate and calcium oxalate for instance, in larger quantities than can be eliminated; whence gout, gravel and calculus result. Grave cerebral affections, apoplexy, hemiplegia, softening of the brain, are rare among the sober peasantry, who have not given up severe agricultural labor in their maturity or in their declining years. These diseases are unknown amongst the monks of La Trappe who are vegetarians. These facts shew that excess of nitrogenous food is a probable predisposing cause of cerebral hæmorrhages. The surest means of producing emboli in the minuter ramifications of the cerebral vessels is to favor the genesis of insoluble compounds in the blood, which the kidneys and other excretory organs are unable to eliminate. In practice patients threatened or at-

tacked with cerebral congestions should diminish the ingestion of nitrogenous food; and in such circumstances the frequent use of purgatives is indicated and practised on the same principle. Although, however, there is good reason to attribute serious consequences to the abuse of albuminate food by elderly and old persons, it is not to be supposed that young men, growing or working hard, should practise such abstinence in this respect as the exigencies of the siege compelled Parisians to undergo.

As regards the second point, some remarkable observations were made upon the modifications of which the flesh of carnivorous or omnivorous animals admits when deprived for some time of animal food and converted into granivora. The urine of a rabbit, fed for eight days on gluten bread exclusively, was completely changed in character, having become in color, odor, density, acid reaction and abundance of urea, identical with lion's urine analysed by Vauquelin. On several occasions both in Paris and in Algeria the attempt was made to feed pigs with flesh from the knackers' yards. Slaughtered after having had no other food for some time, the fat was anything but agreeable to the taste, the oleine predominating in it; the flesh was little better, was in fact disgusting. The speculation had to be given up or modified by adding a large proportion of potatoes to the meat. It was attempted to feed fowls with similar meat, or with worms, maggots, and the pupæ of silkworms; but it was found that the flavor of their eggs "*laissait beaucoup à désirer*," and their flesh was far from appetizing. A mixed diet, not one exclusively animal, was necessary to render either eggs or flesh agreeable. The Montfaucon rats, whose food had been dead horses, &c. (until these became useful to their betters,) gave off an offensive odor when they were caught, of

which their muscles and all other parts partook. Lasseigne found in them calculi of oxalate of calcium, undoubtedly due to the transformation of uric acid into urea and oxalic acid. During the siege most of the domestic carnivora—cats and dogs—were fed, in consequence of the scarcity of more suitable substances, upon a diet approximating closely to that of granivora. Like their masters they had to put up with soup made with oil and siege-bread. The rats, too, had nothing but vegetable products to eat, all bones and other animal refuse being carefully collected and utilized. The results of this change of diet were that the urine lost its characteristic odor and their flesh, in taste and appearance, came to be like that of the animals ordinarily used for food. "How many women habitually fastidious accepted, instead of legs of mutton, legs of big bull dogs, and tom-cats of the gutter for choice rabbit! Rat-flesh was unsurpassable, and careful cooking rendered fear of trichinæ chimerical."

### HAMMOCKS ON MARCH.

In a country like India, where the distinctions between races and religions are so marked and numerous, the maxim that the British Government holds this country "by the sword," is one which has numerous adherents and which, in our opinion, cannot be gainsaid. Such being the case, therefore, it is but natural that the Government should use their best endeavours to maintain the agents whereby their power is thus upheld in the land, in a condition of thorough efficiency and serviceableness; to provide that the meat and drink dispensed to them be of an unadulterated and nourishing description; and to see that the shelter afforded them against the adverse agencies of extreme heat or cold, damp

and malaria, be such as the most approved laws of hygiene require for the soldier in garrison. These requirements have of late years more particularly attracted the attention of the controlling authorities, and to this fact the present excellent system of our Commissariat arrangements, and the lofty, well-ventilated and cool barracks that have been constructed and are now under construction at our principal military stations bear testimony. From the latter, however, it must be understood that we except, *in toto*, the paltry structures lately run up at Allahabad, Jubbulpoor &c., and that we refer solely to such as have seen the light of day and withstood the brunt of the monsoons at stations such as Bellary, Bangalore, Trichinopoly and Cannanore. But whilst the soldier in garrison is thus well cared for in every particular, the arrangements that obtain for providing him with suitable shelter whilst on the line of march are, in our opinion, capable of vast improvement. In the matter of food and drink, our Commissariat Department is generally equal to the calls made upon it; but when the wearied soldier, at the close of his march and labours for the day, throws himself down to rest and recruit his frame for the succeeding day's exertions, he might find a more comfortable and invigorating resting place than that at present provided for him by the orders of the Government whose authority and power he but lives to uphold.

Our attention has been more particularly drawn to this subject by meeting with a Government General Order of July 1871, to the effect that "if the ground on the line of march cannot be made sufficiently smooth, or if the ground be unavoidably damp, the Commanding Officer is allowed to issue, on certificate from the Medical Officer, an extra quantity of straw per day for bedding to each European soldier." From this it would appear that a little straw is always allowed, with the soldier's blanket or greatcoat over

it, as a bed; but apart from its vermin-harboursing and perishable nature, why we ask should such a bulky, and, in very many districts, expensive Commissariat article be used at all for this purpose? And why again should the Medical officer be hauled in to give evidence as to whether the ground is sufficiently damp to need this extra dole of straw? Are his senses of smell and feeling supposed to have been cultivated to a pitch beyond that of the Commanding officer or the Quarter-master attached to the Regiment? The straw that forms under the present system the interposing medium between the body of the soldier and the ground might, we consider, be altogether dispensed with for all the material good it effects. The very fact of lying on the ground is one that militates against the enjoyment of a thorough and satisfactory rest; and in countries, such as Rajpootana and Central India, Bellary and Cuddapah, where the sun's rays act with fearful intensity upon a volcanic soil, we feel convinced that no benefit can result from placing the wearied human frame in juxtaposition with the ground. This much at least we can assert, after learning of the experience of those who have tried it, that instead of rising refreshed from a night bivouac upon the bare ground, an additional feeling of languor, coupled with a disinclination for mental or physical exertion, is the invariable consequence. Starting with these premises, therefore, it seems to us a natural deduction that the human body should, when in a state of repose, rest upon a comfortable and yielding material placed at a slight elevation above the ground surface. The American Indian in his forests, the untutored inhabitant of the Hill Ranges in Southern India, the bushranger in the backwoods of Australia, and even in the plains of some malarial districts of this country, the hardy ryots themselves, put into practice what we are now endeavouring to

advocate on behalf of the European soldier. The ordinary trestle-cot, apart from the limited accommodation afforded by the usual pattern of tent, would be, from its bulk and weight alone, unsuited as an article of camp equipage, whilst on the other hand, the sailor's ordinary canvass hammock would form an excellent substitute and fulfil at the same time the requirements of a satisfactory and comfortable resting-place for the tired soldier. The manner in which the men occupying each tent would lie, should be exactly similar to that now adopted, viz., with their feet to the pole and heads towards the circumference of the tent. At an elevation of twenty inches above the foot of the pole an iron band encircling it, and provided with hooks corresponding in number to that of the men allotted to occupy the tent should be fixed. To these hooks one end of each hammock should be attached, whilst the other end should be fixed to the iron peg employed for McGwire's muster of hammock, and belayed in similar manner. When the tent is struck, the hammocks are to be drawn up through a pulley arrangement at the top of the pole, so as to lie up close against the latter, and over this may come the usual gunny bag covering. On pitching the tent, the hammocks would be once again let down, the pegs at their heads driven in and the tent ready for occupation. The diameter of the tent to be provided with these hammocks should be at least 14 feet. We commend these suggestions to the earnest attention of the authorities, relating as they do more particularly to the well-being and comfort of our soldiers at a time when they are more liable to fall sick, and thereby entail additional labour and anxiety upon those who have the immediate care of them.

### RELATIVE RANK.

We print in our Medical Intelligence, as a small contribution towards the improvement of the Official Army List, a specimen of what a Gradation List ought to be. We never were, ourselves, particularly sensitive on the score of relative military rank or ambitious of that advancement in the military hierarchy which was, some years ago, conferred upon us, with a considerable flourish of trumpets: but as the thing is there we do not see why it should be ignored unless when it is prominently thrust under the "combatant" nose. In these piping times of peace, when batta and prize-money are dreams of the past, the substantial advantages of military rank in the case of medical officers are confined to Presidency house-rent while we are alive and Clive's Fund for our mourning widows. The former point is now tolerably well settled, but we have known two occasions on which surgeons' widows received sub-alterns' rate from Clive's Fund and one in which the error was corrected with extreme difficulty and many shuffling references between England and India, in consequence of the incapacity or unwillingness of the purely military mind to recognize the scale of rank laid down by the Warrant. In social matters we fear the weaker and more sensitive of our brethren must often have their tender withers wrung by the systematic trampling upon their guaranteed rights of precedence which they have to endure. It is galling to a dashing Surgeon-Major, conscious of no mean conversational powers and anxious to impress them on a gentle listener, to see the scanty supply of the fairer sex which Indian dinner-parties so often show told off to majors and captains and sucking civilians, while he is left unmated in the rear! Over

such suffering as this, alas! so common, we prefer to draw a veil.

Now in the Madras Army List "published by authority," there has not been until within the last few months the faintest trace of the fact that medical officers are military officers with definite military rank. The innovation consists in stating, at the head of each sub-division of the Medical Establishment, the relative rank to which it corresponds; and even this will, no doubt, prevent future trouble in such matters as the pensions from Olive's Fund. We find a "Gradation List of the Bengal, Madras, and Bombay Armies," a "Gradation List of Officers on the Madras Establishment," a "List of Retired Officers of the Madras Presidency above the rank of Captain." Medical officers are "Officers," but we look in vain for any of their names in any of these Lists. But in another List of Retired Officers the absurdity reaches the climax of grotesqueness. Here retired medical officers, many of whom rank as Brigadier-Generals, and scarcely one of whom is below a Major, are arranged alphabetically in a list of Captains and Subalterns!

Our humble Gradation List is only offered as a hint to the combatant compilers of Army Lists. It does not profess to be complete, even for officers of the rank of major, our brethren of the British Medical Service not being included: but it shows, as we conceive, what Gradation Lists of military officers ought to be.

#### DR. HOOKER AND MR. AYRTON.

"Hyperion to a satyr" is the quotation which the juxtaposition of these names suggests. We have been favored with a perusal of the indignant protest forwarded to Mr. Gladstone by the leaders

of Physical Science in England. It is a very plain-spoken and yet temperate paper, and, making every allowance for its being an *ex parte* statement of the case, it displays an amount of arrogant insolence and contempt for scientific reputation on the part of the First Commissioner of Works, eminently characteristic of the gentleman who began his official career with a public sneer at "sculptors, architects and gardeners." We trust that the issue of a contest between Mr. Ayrton, backed by the generous but necessarily half-hearted support of Mr. Gladstone (whose tolerance of his subordinate is a psychological curiosity), on the one side, and Dr. Hooker, supported by the sympathy of every student of Nature and of almost every educated person in the civilized world, on the other, cannot be doubtful. The viper in the fable found that he was biting a file and desisted: let us hope that Mr. Ayrton will find a "gardener" a harder subject than an "architect." At the worst the scientific world would not lose Dr. Hooker; but his separation from Kew, which he and his father have made what it is, would be more than a merely national calamity. Better even to lose Mr. Ayrton from the Ministry.

# REVIEW

*On Antisepsity in Surgery.* [By EDWARD LUND, F.R.C.S.,  
Lecturer on Anatomy, and one of the Surgeons to the  
Manchester Royal Infirmary.]

Mr. Lund has presented us in a pamphlet with a brochure on the antiseptic treatment of Wounds, Abscesses and Ulcers. Starting with the motto "Keep the wound clean," he proceeds to discuss the very pertinent query, "Cui bono pus?" This pus he rightly regards as useless and injurious, because the result of putrefactive changes in the fluid exuded, in the reparative efforts of Nature, on the surfaces of all solutions of continuity. "This fluid matter," he says, "together with other secretions from such surfaces, might be styled the excreta of wounds, as serving no useful purpose in the animal economy, and as being waste unused material thrown off from the body." But we demur to the pathology of the writer. We cannot consider the term *excreta* as at all appropriate or applicable to the fluid in question and as far from believing that it serves "no useful purpose in the animal economy." On the surface of a wound in a healthy body, when this wound is carefully treated on sound surgical principles, the exuded lymph should, in quantity and quality, suffice for the repair of the wound; and, only in those cases will the quality fail and the quantity prove excessive, when the body is unhealthy, or placed in unhygienic conditions, or the local antiseptic treatment has been defective. Again, in a subsequent page, in allusion to the formation of pus, Mr. Lund writes, "when once the vessels of any part have taken upon themselves the secretion of pus, it is most difficult, if not impossible, to control their action and to stop its further production." Here also our pathological views are at variance with those of our author. We cannot regard pus as a secretion of the vessels of any part, simply because these tubes have no secreting power.

But while taking exception to some of the pathological doctrines of the author, we hail his accession to the ranks

of those who testify to the value of Professor Lister's Antiseptic treatment. This treatment, we believe, to be one of the most valuable contributions of later days to conservative Surgery, and the experience of Indian Surgeons verifies and corroborates all that has been urged in its favor by Surgeons in the United Kingdom. Besides promoting the normal repair of wounds and ulcers, the carbolic acid treatment, as prescribed by Mr. Lister, secures a much more pure and pleasant atmosphere in surgical wards, and we were never more struck with this fact than two years ago when visiting the wards of the Clinical Professor and those of his surgical colleagues in the Edinburgh infirmary. The former presented a striking and favorable contrast to the latter in the odors which pervaded them.

In conclusion, we would, however, sound one note of caution as to the use of carbolic acid. The proclivity of the natives of this country to tetanus renders it necessary that, in cases of lacerated wounds, the solution of acid should be as weak as possible, and certainly not above one part of the acid to sixty of water.

## MEDICAL MISCELLANY.

*The Treatment of Enteric or Typhoid Fever.* By JAMES LITTLE, M. D., Univ. Edin., M. R. I. A.; one of the Physicians to the Adelaide Hospital.

During the past three weeks an unusually large number of persons suffering from enteric or typhoid fever have presented themselves at the Adelaide Hospital, they have not come from any single neighbourhood but from various localities in and around Dublin. I therefore think the disease just now prevails somewhat extensively, and I am anxious to draw attention to its treatment, because even the last editions of the standard text-books do not, in my opinion, tell all that in the present state of our art we can do for the disease. In one important matter, as I conceive, the advice given in all of them is injudicious, a valuable means of treatment is not mentioned at all and the indications for the employment of exceptional measures are not stated with sufficient precision. Several of those I adopt are, I know, daily prescribed by other physicians in this city, and most of them I have copied from the practice or tried on the recommendation of some one else; but the opinions I now express regarding them are founded on their observed effects in my own cases, and the justification of my present description of them arises from the circumstance that they are not generally known, or, as I believe, sufficiently valued.

Next to early confinement to bed, which perhaps more than anything else lessens the severity and risk of the fever, I rank the rigid exclusion of animal broths and jellies from the food, as tending to keep the disease mild. On this point I find myself quite at variance with the text-books in which such articles as beef-tea and Liebig's essence of meat are recommended. Dr. Hudson in his lectures on Fever insists on the liability of all kinds of broths to increase the diarrhoea, and I cannot but attach the utmost importance to this matter, as I have repeatedly seen a patient who was passing four to six stools on a milk diet have eighteen or twenty during the day and night after he had taken beef-tea. Milk should be the chief article of diet in enteric fever. Thirsty patients sometimes object to its mawkish taste, and I generally, therefore, add ice to it, and a little lime water in cases in which it returns curdled. Junket or rennetted milk given before it has separated into whey and curd, rice milk,

custard, baked custard in small quantity, rusks and hot milk, and blauc-mange, generally afford sufficiently varied ways of giving milk. Freshly made chicken jelly is less liable than beef-tea to increase the abdominal symptoms, and I use it in those cases in which milk, even with lime water, disagrees, but in my experience such an occurrence is very rare, and when encountered is usually in a person chronically dyspeptic. For years I have made the administration of two or three cups of really good tea or coffee between daybreak and two in the afternoon a regular part of the treatment of every case of fever, unless there was in the state of the nervous system some evident contra-indication. I did this in consequence of the well-known observations of Dr. Parkes on the effect of coffee in increasing the elimination of urea in fever, and I am satisfied that both it and tea lessen drowsiness and prostration, and increase the secretion of urine; once or twice in the day they may be given, poured upon a well-whisked egg, and thereby an additional means of nourishing the patient is obtained. I agree with those who consider alcoholic stimulants in any quantity seldom needed in enteric fever.

Cold baths I have systematically employed since Dr. Cuming in his Report on Medicine in this Journal (May, 1869), drew attention to their use in enteric fever. I have not given them at such short intervals as recommended by Jürgensen and by Bartels and Liebermeister; three, or at most four are given in the twenty-four hours. In the hospital we have full-sized baths, which run on castors, one of these is brought to the bedside, half full of water at 75° Fahr., and if the temperature of the patient exceed 102° Fahr., he is lifted out and laid in the bath; he is kept in it for a period varying from five to fifteen minutes, and then quickly dried and put back to bed. The bath is usually most grateful to the patients; they often say it makes them feel strong, and after the evening bath they commonly fall into a sound sleep. I have used it with manifest benefit where cooling and wheezing râles existed in the chest, and where deficiency in the percussion resonance posteriorly and mucro-crepitus indicated postural stasis in the lungs; but I have never used it when there was hæmorrhage from the bowels, or such pain as to justify the fear that peritonitis existed. There is sometimes slight chilliness in the extremities after it, and a little shivering. This indicates that the bath should not be a prolonged one, but does not forbid its use. Twice, however, I have considered it unsafe to continue the baths, once because a marked shivering followed, and once because the patient was alarmed by it. In cases in which the disease is running a mild course I only give one bath in the day, at the height of the usual evening paroxysm of fever.

By a dietary such as I have described, and by the systematic employment of the baths, I am convinced the severity and danger

of enteric fever are greatly diminished, and the occurrence of any of the serious accidents incidental to the complaint rendered very rare; but I do not believe that its duration is appreciably shortened.

Besides these means there are others which I have found of material benefit when certain conditions were present.

When during the first eight days the face is flushed and there is headache, a high temperature and a thickly coated tongue, and when the evacuations, three or four in the twenty-four hours, are neither very large nor very liquid, a dose of calomel from four to six grains, perceptibly lessens the heaviness of the fever. I have sometimes given the calomel a second time, after an interval of a day or two; but never oftener; it increases the evacuations during the twelve hours after its administration, but never in my experience sets up troublesome purging.

In enteric fever it is not uncommon to find a patient lying on his back, perceptibly impeded in his breathing, his abdomen tumid and projecting, but not markedly tender, and on inquiry it will be found either that the bowels have not acted for twelve hours, or that though the stools are frequent, only a very little fecal matter with wind passes each time. In such a case great relief is obtained by giving a draught containing two drachms of castor oil, with one or two of turpentine. If for any reason the physician hesitates in ordering this, he may have a warm water enema administered, but the draught relieves much more completely.

In my experience poultices and fomentations have not proved so useful as their constant recommendation by authors led me to expect; their weight, and the bandaging necessary to keep them properly applied render them anything but grateful to most patients, and I now seldom employ them except when the abdomen is tympanitic, in which case the turpentine stupe is of undoubted utility.

Since I have kept my patients rigidly to the diet I have mentioned, I have not often found it necessary to give medicines to check looseness of the bowels; three or four actions in the twenty-four hours seldom do any harm; when it is necessary to interfere I have found by far the most useful remedy a pill, the use of which Dr. Hudson some years ago suggested to me, it contains one-sixth of a grain of carbolic acid, one-sixth of a grain of opium, and three grains of bismuth. This combination I have found so admirable for moderating diarrhoea and tympanitis that I have seldom employed any other; two, three, or four pills may be given during the day and night; of other remedies sulphuric acid is, I think, the best.

Hæmorrhage from the bowels is also rare when milk diet and cold baths are employed; when it occurs, gallic acid, a scruple every second or third hour, and turpentine were the remedies

upon which, until lately, I relied; in consequence however, of the power of arresting hæmorrhage, which ergotin has recently been shown to possess, when administered hypodermically,\* I some weeks ago made up my mind to try it in the hæmorrhage of typhoid, as soon as a case presented itself, and as far as the experience of a single one goes, I have reason to be well satisfied with the experiment. On the morning of the fourteenth day of enteric fever, blood appeared in the discharges of a patient now under my care in the Adelaide Hospital; when I visited her at noon I found more than a pint of clots had come away, and while I was in the ward more than half a pint of pure blood, partly clotted and partly liquid was passed, at the same time the features became sunken, and the extremities cold. I then injected five grains of ergotin, and repeated the injection at three o'clock. Within half an hour of the first injection about three ounces of blood escaped from the bowel, but none came again till four o'clock the following morning, when half a pint of clots escaped, and a third injection was used; the only other treatment employed during that day and night was the application over the ilio-cæcal region of an ice bag. There was no further discharge of pure blood; the three or four next stools were, however, blackish, and as a precaution three twenty-grain doses of gallic acid were given on each of the two following days.

There is a group of nervous phenomena sometimes present in typhoid fever, for which, I believe, the remedy is a full dose of quinine. I have seen similar symptoms occurring at the commencement of cerebro-spinal fever relieved by quinine, and was led in consequence to try it in the enteric disease. A delicate lad of fourteen, in whose case I had the advantage of Dr. Hudson's counsel, was attacked with enteric fever when recovering from a pulmonary affection; most of the febrile phenomena, though quite characteristic, were not severe, but in the beginning of the third week, although the bowels were free and the urine abundant, he became drowsy, and his breathing and pulse of the character which indicates cerebral oppression, it became difficult to arouse him sufficiently to swallow, and for several days he did not speak; a blister was applied to the nape of the neck, and turpentine with ether, and a moderate allowance of brandy given, but without marked effect on the cerebral symptoms; after these had persisted five days, he was in the following condition:—He lay as if heavily asleep, with difficulty could

\* I have found the hypodermic injection of ergotin check violent hæmoptysis in acute phthisis, and arrest rather profuse hæmaturia in a case which is probably one of malignant disease of the kidney. I use five grains suspended in twenty or thirty minims of distilled water; severe pain and swelling have invariably followed the injection, and I now always throw it into the loose cellular tissue of the buttock, where it produces less suffering than if injected into the arm.

he be roused to swallow; he never spoke, and when I succeeded in getting him to put out his tongue he did not draw it back again till again aroused; he only indicated by restlessness when his bladder and bowels were going to act; his morning temperature was  $104^{\circ}$ , his respiration 52, and his pulse exactly equalled the respirations, it was also 52, and had a distinct intermission every fifteen or twenty beats; six grains of quinine were now given, and the dose repeated in twelve hours. The following morning the temperature was  $101^{\circ}$ , the respirations had fallen to 40, and the pulse risen to 68 without intermissions. A third and fourth dose of quinine were given, and the turpentine continued, and, though slowly, the cerebral symptoms disappeared, and the lad made a good recovery. I think it is probable these symptoms indicate venous stasis or serous effusion at the base of the brain; but whether this be so or not, it is necessary carefully to distinguish the condition, to which I now allude, from the cerebral oppression due to deficient secretion of urine, the most common cause of stupor in fever, and one which, of course, requires a very different treatment.

The opinions I have formed as to the best way of combatting other dangers in enteric fever, do not materially differ from those to be found in the text-books, and I will, therefore, merely state the measures which, out of the various ones enumerated in these works, I have found the best.

For delirium and wakefulness, in the early stage, leeches to the temples, and, later, provided the urine be fairly abundant, a dose of four, five, or six grains of Dower's powder will be found superior to any of the hypnotics recently introduced; headache may sometimes be temporarily relieved by the application of the vapour of bisulphide of carbon, as suggested for neuralgic headache, by the late Dr. Kenyon, but cutting the hair and leeching are the remedies for severe headache.

Nausea and persistent retching in the early days may usually be relieved by an emetic of ipecacuanha, and later on in the fever, by ice and by draughts containing ten grains of bicarbonate of soda, ten grains carbonate of bismuth, and four minims of prussic acid.

Scantiness of urine requires dry cupping of the loins, effectually performed, and the internal use of the salts of potash and the spirit of nitrous ether. The former of these measures is not, I think, adopted in fever as often as with advantage it might be; when actual stupor with suppression of urine occurs it is a remedy on which most physicians rely, but I am sure that it is often desirable to resort to it when there is merely drowsiness and confusion of mind coincident with a scanty renal secretion. A stout young woman, for whom, under these circumstances, I lately prescribed cupping, told me the next morning she felt "altogether different" after the cupping, there was conscious-

ness of amendment, a symptom of great prognostic value in fever.

Indications of more or less pulmonary congestion are very usual in enteric fever, and often do not call for interference. When there are cooing and wheezing râles, and the sleep is broken by fits of coughing a turpentine stupe at bed-time is usually sufficient to relieve. When there is any deficiency of resonance posteriorly I attach most importance to the precaution on which I first heard Dr. Stokes insist, of not allowing the patient to remain on his back, but keeping him alternately on his right and left side, supported if need be by pillows. For graver chest symptoms, turpentine, ether, and brandy are the only remedies on which, I think, any reliance can be placed.—*Dublin Journal*.

### Cutaneous Absorption.

In a recent note to the Paris Academy, M. Bernard writes as follows:—

I desire to submit to the Academy an account of experiments made in the Vincennes Asylum as to cutaneous absorption in baths of medicinal vapour. In such an institution, among patients with various chronic affections, I am favourably situated for experimenting on this question on a large scale.

Reveil's memoir on the subject gives the facts which are known up to the present. "Absorption in the bath," he says, "only takes place in rare and exceptional circumstances; it is facilitated by washing the skin, continued rubbing, and by certain irritant and solvent substances."

The bath apparatus consisted of a furnace, a boiler, a chamber in which the steam coming from the boiler was charged with the substance to be applied, and a wooden cage, in which the patient was seated while enveloped in the vapour.

I used iodide of potassium in my experiments—(1), because it is not volatile; (2), because its presence in urine is easily determined by nitric acid and chloroform; (3), because, in seizing the iodine set at liberty by the nitric acid, the chloroform takes a rose colour varying in a marked way with quantity, and thus, by comparing with a graduated scale, one may determine pretty accurately, and without quantitative analysis, the quantity of iodide of potassium in the urine.

The skin of the subjects, experimented on was intact, without wound or scratch. The urine was examined before the bath was taken, and the absence of iodine ascertained. By a respiratory tube, the patient breathed the external air through his mouth, the nostrils being pinched. A thick sheet of caoutchouc was bound by a T-bandage over the anus; the penis was sheathed in the same material; while the hands and feet were wrapped in cotton and gummed taffeta.

The subject was then placed in the cage, and subjected for thirty minutes to vapour from the mixing chamber, into which there had been put 20 grms. of iodide of potassium. The temperature in the cage was gradually raised to  $45^{\circ}$ ; the skin of the subject became wet. He was then wrapped in a woollen covering and put in bed, when profuse perspiration took place. The urine analysed two hours after the bath gave a rose color: some taken three hours after gave a much more lively colour, thus affording clear proof of the absorption of iodide of potassium through the skin, the only way it could have entered the system. Besides, if it had entered by pulmonary passages it would have been eliminated immediately after the bath. These first experiments, then, prove the fact of cutaneous absorption.

In a second series I sought to determine to what temperature the air, mixed with medicamental vapour, must be raised, in order to the absorption taking place.

A very sensitive thermometer was applied to the breast of the subject, and the temperature of the bath varied in the series of experiments from  $30^{\circ}$  to  $38^{\circ}$ , the time being, as before, thirty minutes. I only found the absorption take place when the temperature was  $38^{\circ}$  (or one degree above the temperature of the body). Indeed, the sebaceous matter in the cells of the epidermis only commences to dissolve at  $38^{\circ}$  when the skin is really wet; it is then that imbibition takes place, and consequently absorption. The iodide of potassium, conveyed mechanically by the vapour, penetrates the epidermis, whence it passes into the capillary blood system and the other organs.

Thus we understand how absorption does not generally take place in a water-bath. Owing to the density of the water, and its great specific heat, the temperature of such baths is usually not raised beyond  $30^{\circ}$  to  $33^{\circ}$ . Dr. Homolle remained in a bath at  $34^{\circ}$  or  $35^{\circ}$ ; would he have been able to bear  $38^{\circ}$  or  $39^{\circ}$ ? Besides, the liquid layer touching the skin is not constantly renewed, as in the vapour-bath.

I succeeded, however, in obtaining the cutaneous absorption at a temperature under that of the body, in the following way:—

The subject had first a simple vapour-bath, to destroy the sebaceous matter; his skin was washed and carefully dried, and he was replaced immediately in the cage, where he was exposed to the vapour of iodide of potassium for thirty minutes, the temperature of the bath varying, in several experiments of this kind, from  $34^{\circ}$  to  $36^{\circ}$ . Two hours after a bath at  $34^{\circ}$  the colouration of the urine was slightly rose; after a bath at  $36^{\circ}$  it was much more distinct.

M. Colin has described an experiment in which he allowed water charged with cyanide of potassium to fall for five hours' time on a horse's back. This caused the death of the animal; the

sebaceous matter having been destroyed through percussion, and cutaneous absorption taking place.

In the sand-baths at Cette and Arcachon, which are found so efficacious for scrofulous affections, tumours, &c., what takes place? The temperature being considerably above that of the body (over  $40^{\circ}$ ), the skin is wet, the sebaceous matter dissolves in the perspiration, and there follows absorption of the salts contained in the sand.

I have not been able to find free iodine in the urine; the use of nitric acid has always been necessary. Besides iodine once introduced into the system soon forms various compounds.

In summing up his results, M. Bernard further mentions that the elimination of the salt, commencing two hours after the bath, increases in quantity till a meal is taken, after which it diminishes (probably because of the water received into the system), and then again increases. It ceases completely twenty-four hours after the bath, whatever the amount of the salt, the temperature, or the duration of the bath.—*Chemical News*.

#### Dr. Boggs on *Eucalyptus Globulus* as a substitute for Cinchona preparations.\*

I believe that the new substances extracted from the *Eucalyptus Globulus* will play an important part in Therapeutics. I do not propose to enter into every detail of the medicinal properties of this magnificent tree, for they have been already described by Professor Gubler. I desire merely to draw attention to some of its properties as yet little known. Besides its application as a febrifuge, it is used in all cases in which antispasmodics are indicated, and advantage has been taken of this property to use the drug as a substitute for *Datura stramonium*. Thus, in England the leaves have been employed in cigarettes as a remedy for asthma, and in all cases complicated with pain and insomnia.

Experiments have shown that all parts of this gigantic tree, the leaves, the bark, are impregnated with febrifugal properties. According to analyses which have been made, a substance has been found in them identical with the salt of quinine which is found in cinchona, which behaves similarly with strong acids; and where it is combined with sulphuric acid a crystallized salt is formed completely analogous to sulphate of quinine. To make sure of the resemblance between these two salts, experiment has been advanced farther and the result of a combination of chlorine and ammonia with the *Eucalyptus* salt was exactly

\* Letter to the Editor, Journal des Connaissances Médicales.

the same as with quinine, that is to say, a green coloration was produced.

An attempt has been made to acclimatize this tree in Austria, but it was found that its medicinal properties were much less strongly marked than in its native country. Nevertheless it was established that it was most serviceable in certain obstinate cases of intermittent fever in which even quinine had failed. It was observed, besides, that the duration of treatment was less under Eucalyptus than under quinine; and that of all preparations the tincture appeared to be the best, because it contains, besides the extract (which is like the resin of cinchona and which, consequently includes the active principle of the tree); an essential camphorated oil. This tincture, having an aromatic odor is very pleasant to take, especially with simple syrup or syrup of oranges. In trifling cases two or three tea-spoonsful immediately before the paroxysm are sufficient to suspend it; but when the fever is attended with cachexia, it should be administered in small doses, morning and evening, for some time. As the therapeutical action of this tree is analogous to that of the cinchona the salt or active principle of the Eucalyptus, as well as its other parts are exhibited in the same doses and in the same form as corresponding doses of cinchona. The distilled water of the Eucalyptus supplies, besides, an agreeable vehicle for a crowd of medicines, stimulants especially. We have, therefore, a true substitute for cinchona, the price of which is always high and the supply of which threatens to fail. To be prepared for such a calamity it would be desirable to search for other plants besides cinchona which contain quinine.

## MEDICAL INTELLIGENCE.

*Graduation List of Officers of the Madras Army of the rank of Major as they stood on the 30th June 1872.*

| Rank. | Names.                               | Corps.     | Date of Rank.   |
|-------|--------------------------------------|------------|-----------------|
| M.    | F. W. Gregory ... ..                 | 44th F.    | 15th Feb. 1861. |
| "     | J. Penton ... ..                     | 89th F.    | 5th April 1864. |
| "     | S. H. E. Caamier ... ..              | R. A.      | 11th Oct. "     |
| S.    | J. M. Joseph, M.D. ... ..            | M. E.      | 14th Dec. "     |
| "     | E. S. Cleveland, M.D. ... ..         | "          | " Feb. 1865.    |
| "     | W. H. Harris, M.D. ... ..            | "          | 13th Feb. 1865. |
| "     | W. H. Rean, M.D. ... ..              | "          | 14th May "      |
| M.    | F. Cobbe ... ..                      | R. A.      | 14th June "     |
| "     | B. L. Forster ... ..                 | "          | 12th July "     |
| S.    | H. T. Shaw ... ..                    | M. E.      | 10th Sept. "    |
| "     | A. Sanderson, M.D., M.A. ... ..      | "          | 20th October "  |
| "     | C. Cooper, M.D. ... ..               | "          | 20th Nov. "     |
| "     | J. McDonald, M.D., F.R.C.S.E. ... .. | "          | 14th Feb. 1866. |
| "     | S. J. Wynne, M.D. ... ..             | "          | 24th March "    |
| "     | W. R. Cortish, F.R.C.S. ... ..       | "          | 1st April "     |
| "     | J. S. Morton, M.D. ... ..            | "          | 10th June "     |
| "     | A. H. Bearian ... ..                 | "          | 10th " "        |
| "     | J. P. Nash, M.D. ... ..              | "          | 20th " "        |
| M.    | E. G. Campbell ... ..                | S. C.      | 11th August "   |
| S.    | G. S. W. Ogg, M.B.M.A. ... ..        | M. E.      | 12th Sept. "    |
| S.    | J. Shortt, M.D. ... ..               | M. E.      | 20th " "        |
| M.    | F. C. D'E. Barclay ... ..            | 24th F.    | 29th October "  |
| "     | C. M. Playfair ... ..                | R. A.      | 11th Dec. "     |
| "     | A. H. Cooke ... ..                   | S. C.      | 11th " "        |
| "     | R. V. Handyside ... ..               | "          | 12th " "        |
| "     | W. O. Swanston ... ..                | "          | 20th " "        |
| "     | W. H. R. Godfrey ... ..              | "          | do. " "         |
| "     | C. M. Hailes ... ..                  | "          | do. " "         |
| "     | A. D. Gloy ... ..                    | "          | do. " "         |
| "     | C. D. Clementson ... ..              | "          | 26th " "        |
| "     | A. Gahagan ... ..                    | "          | 26th " "        |
| "     | C. F. J. Skottowe ... ..             | "          | 26th " "        |
| S.    | D. C. McAllum, M.D. ... ..           | M. E.      | 30th " "        |
| M.    | G. Kallender ... ..                  | S. C.      | 2nd Jan. 1867   |
| S.    | W. N. Chipperfield ... ..            | M. E.      | 3rd " "         |
| M.    | A. C. Lilly ... ..                   | S. C.      | 20th " "        |
| "     | H. Fraser ... ..                     | S. C.      | 20th " "        |
| "     | W. Munro ... ..                      | S. C.      | 20th " "        |
| "     | W. H. P. G. Bluet ... ..             | 10th Foot. | 22nd " "        |
| S.    | W. Pearl ... ..                      | M. E.      | 24th " "        |

## Graduation List of Officers, &amp;c.—continued.

| Rank. | Name.                   | Corps.  | Date of rank.   |
|-------|-------------------------|---------|-----------------|
| S.    | G. Marr, A.M. & M.D.    | M. E.   | 24th Jan. 1867. |
| "     | W. Doyle, M.D.          | "       | 24th " "        |
| "     | D. E. Lloyd             | "       | 24th " "        |
| "     | T. Lowe                 | "       | 24th " "        |
| M.    | C. M. White             | S. C.   | 26th " "        |
| "     | R. K. Macquoid          | "       | 26th " "        |
| "     | C. A. McMahon           | "       | 4th Feb.        |
| "     | M. C. Funnell, F.R.C.S. | M. E.   | 7th " "         |
| S.    | C. S. B. Walton         | S. C.   | 24th " "        |
| "     | J. Woodcock             | "       | 1st March       |
| "     | M. K. Bourne            | "       | 15th " "        |
| "     | G. R. Bowen             | "       | 17th " "        |
| "     | G. L. Griffin           | 45th F. | 19th " "        |
| "     | P. P. L. Stafford       | S. C.   | 20th " "        |
| "     | G. A. Burn, M.A.        | M. E.   | 30th May        |
| "     | C. Hakes                | R. A.   | 11th June       |
| M.    | W. S. Drvor             | S. C.   | 11th " "        |
| "     | J. R. S. Henderson      | "       | 30th " "        |
| "     | J. V. Morris            | "       | 26th July       |
| "     | T. Crandall             | M. E.   | 4th Aug.        |
| "     | R. Drumpster            | "       | 4th " "         |
| "     | J. Houston, M.D.        | "       | 4th " "         |
| "     | H. E. Buxted, M.D.      | "       | 4th " "         |
| "     | H. Crocker, M.D.        | "       | 4th " "         |
| "     | B. Arnold               | "       | 4th " "         |
| "     | H. Adam                 | "       | 4th " "         |
| "     | W. H. Morgan            | "       | 4th " "         |
| "     | C. Barton               | 19th R. | 14th " "        |
| M.    | B. C. A. Marshall       | S. C.   | 20th " "        |
| "     | A. R. McInnes           | "       | 30th " "        |
| "     | T. W. Stansfeld         | "       | 21st " "        |
| "     | A. H. M. Dickey         | "       | 21st " "        |
| "     | W. H. White             | "       | 22nd Sept.      |
| "     | G. E. Bulger            | 10th F. | 6th Nov.        |
| "     | J. B. Swete             | B. A.   | 10th Dec.       |
| "     | C. L. Persira           | "       | 10th " "        |
| "     | C. J. Smith             | "       | 10th " "        |
| "     | E. L. Hankin            | "       | 10th " "        |
| "     | H. E. Ryves             | "       | 11th " "        |
| "     | P. Salter               | "       | 11th " "        |
| "     | S. C. Montgomerie       | "       | 11th " "        |
| "     | B. J. C. Peier          | "       | 20th " "        |
| "     | H. T. Duncan            | "       | 20th " "        |
| "     | G. C. Micchin           | "       | 29th " "        |
| "     | D. Shaw                 | "       | 8th Jan. 1868.  |
| "     | O. Morgan               | "       | 11th " "        |
| "     | J. Duval                | "       | 11th " "        |
| "     | R. S. Burge             | "       | 11th " "        |
| "     | H. King, M.A., M.D.     | M. D.   | 11th " "        |
| "     | A. T. Baldwin           | "       | 13th " "        |
| M.    | F. A. Fenton            | "       | 20th " "        |

## Graduation List of Officers, &amp;c.—continued.

| Rank. | Name.                   | Corps.     | Date of rank.   |
|-------|-------------------------|------------|-----------------|
| M.    | J. Allardyce            | S. C.      | 20th Jan. 1868  |
| "     | H. Norris               | 2 C. L. S. | 20th " "        |
| "     | H. Farrer               | S. C.      | 20th " "        |
| "     | A. G. Duff              | 36th L.    | 20th " "        |
| "     | R. H. Beddome           | S. C.      | 20th " "        |
| "     | B. Williamson, M.B.     | M. E.      | 30th " "        |
| S.    | G. A. Arbuthnot         | 8th Ca.    | 5th Feb.        |
| M.    | A. Templeman            | 21st Foot. | 15th " "        |
| "     | G. Bidie, M.B.          | M. E.      | 20th " "        |
| "     | J. G. Reed, M.D.        | "          | 20th " "        |
| "     | J. Henderson, M.D.      | "          | 20th " "        |
| "     | H. M. Ross, M.D.        | "          | 20th " "        |
| "     | C. T. Eves              | "          | 20th " "        |
| "     | J. S. Ridings, M.D.     | "          | 20th " "        |
| "     | J. J. Heffernan         | "          | 20th " "        |
| "     | D. W. Trimnell          | "          | 20th " "        |
| M.    | A. B. Camberlege        | C. S.      | 25th " "        |
| "     | W. M. Parratt           | "          | 25th " "        |
| "     | D. Stadden              | "          | 25th " "        |
| "     | R. S. J. Prendergast    | 2nd C.     | 20th March      |
| "     | J. E. Baillie           | S. C.      | 20th " "        |
| "     | B. F. Heysham           | "          | 3rd April       |
| "     | G. F. Gildea            | 21st F.    | 14th " "        |
| "     | C. A. Andrews           | M. E.      | 25th " "        |
| M.    | W. H. G. Palmer         | S. C.      | 9th June        |
| "     | W. Hands                | "          | 9th " "         |
| "     | T. L. Scott             | "          | 9th " "         |
| "     | G. De la P. Beresford   | "          | 10th " "        |
| "     | S. Galbraith            | "          | 10th " "        |
| "     | W. Osborn               | "          | 10th " "        |
| "     | E. Hill                 | "          | 10th " "        |
| "     | T. T. Turton            | "          | 26th " "        |
| "     | J. Hudleston            | "          | 3rd July        |
| S.    | J. M. Donnelly, M.D.    | "          | 3rd " "         |
| M.    | F. M. Raynsford         | S. C.      | 10th July 1868. |
| S.    | J. Kees, M. D.          | M. E.      | 24th August     |
| "     | R. Wilson               | "          | 24th " "        |
| "     | R. W. Cockerill         | "          | 24th " "        |
| "     | C. Robertson, M. D.     | "          | 24th " "        |
| "     | A. Gamack, A. M., H. D. | "          | 24th " "        |
| "     | J. Wilkins, M. D.       | "          | 24th " "        |
| M.    | A. M. Davies            | S. C.      | 55th " "        |
| "     | G. C. Clug              | 45th F.    | 15th " "        |
| "     | W. Chrystie             | Engineers. | 15th " "        |
| "     | H. P. Hawkes            | S. C.      | 15th " "        |
| "     | W. L. Twentymen         | 18th Hns.  | 15th " "        |
| "     | W. J. Morris            | 4th C.     | 10th Nov.       |
| S.    | T. G. Howell            | M. E.      | 12th " "        |
| M.    | J. P. Pedler            | S. C.      | 8th Dec.        |
| "     | T. Dyer                 | "          | 8th " "         |
| "     | E. A. Motlet            | "          | 8th " "         |

## Graduation List of Officers, &amp;c.—continued.

| Rank. | Names.                           | Corps.    | Date of Rank.   |
|-------|----------------------------------|-----------|-----------------|
| M.    | F. J. Millar ...                 | S. C.     | 20th Dec. 1868. |
| "     | W. G. Groves ...                 | 32nd Inf. | 20th " "        |
| "     | B. H. W. Magrath ...             | S. C.     | 20th " "        |
| "     | F. T. Pollok ...                 | "         | 20th " "        |
| "     | R. C. Lavie ...                  | "         | 20th " "        |
| "     | S. W. Lennox ...                 | 23rd Inf. | 27th " "        |
| "     | S. New ...                       | S. C.     | 27th " "        |
| "     | E. Cave ...                      | "         | 27th " "        |
| "     | W. R. Mesham ...                 | "         | 27th " "        |
| "     | J. L. Denwell ...                | "         | 20th Jan. 1869. |
| "     | R. B. Kennedy ...                | 23rd Inf. | 20th " "        |
| "     | G. M. Payne ...                  | S. C.     | 20th " "        |
| "     | C. B. L. Smith ...               | "         | 20th " "        |
| S.    | J. Ross, M. D. ...               | M. E.     | 29th " "        |
| "     | S. T. Heard, M. D. ...           | "         | 29th " "        |
| "     | W. A. Smith, M. D. ...           | "         | 29th " "        |
| "     | W. P. deFabeck ...               | M. E.     | 29th " "        |
| "     | G. E. Whitton, M. B. & B. A. ... | "         | 29th " "        |
| "     | T. Beaumont, M. D. ...           | "         | 29th " "        |
| M.    | C. H. Beddek ...                 | S. C.     | 7th Feby. "     |
| "     | W. Kiecaid ...                   | "         | 3rd March "     |
| "     | W. G. M. Strickland ...          | "         | 3rd " "         |
| "     | J. Swiney ...                    | "         | 12th April "    |
| "     | E. B. Sladen ...                 | "         | 14th " "        |
| "     | R. T. Snow ...                   | "         | 8th June "      |
| "     | H. H. Peard ...                  | "         | 9th " "         |
| "     | C. J. R. Bell ...                | "         | 9th " "         |
| S.    | W. P. Kelly ...                  | M. E.     | 9th " "         |
| M.    | W. Hudleston ...                 | S. C.     | 13th " "        |
| "     | R. H. R. Rowley ...              | R. A.     | 20th " "        |
| "     | C. J. Richards ...               | 35th I.   | 13th Aug. "     |
| "     | W. H. Whitecock ...              | S. C.     | 23rd " "        |
| "     | S. Hodgson ...                   | 2 C.      | 9th Sep. "      |
| "     | P. C. Trent ...                  | 48 F.     | 18th " "        |
| "     | F. Hersley ...                   | S. C.     | 20th Nov. "     |
| "     | F. G. Hankin ...                 | "         | 11th Dec. "     |
| "     | L. H. Isacke ...                 | "         | 11th " "        |
| "     | J. O. Mayne ...                  | Engr.     | 11th " "        |
| "     | C. S. Mifman ...                 | R. A.     | 12th Dec. "     |
| "     | H. D. Chute ...                  | S. C.     | 12th " "        |
| "     | H. S. Stuart ...                 | "         | 12th " "        |
| "     | F. F. H. Bishop ...              | "         | 12th " "        |
| "     | H. C. Menzies ...                | "         | 12th " "        |
| "     | A. T. Searle ...                 | "         | 12th " "        |
| "     | J. D. Vallance ...               | "         | 12th " "        |
| "     | J. H. Pello ...                  | R. A.     | 19th " "        |
| "     | W. R. Johnson ...                | S. C.     | 20th " "        |
| "     | J. A. Campbell ...               | "         | 20th " "        |
| "     | C. J. Godfrey ...                | "         | 20th " "        |
| "     | A. Drury ...                     | "         | 24th " "        |
| "     | H. F. Drakeyne ...               | "         | 20th Jan. 1870. |

## Graduation List of Officers, &amp;c.—continued.

| Rank. | Names.                   | Corps.    | Date of Rank.   |
|-------|--------------------------|-----------|-----------------|
| M.    | J. Crawford ...          | S. C.     | 20th Jan. 1870. |
| "     | O. F. Smithers ...       | "         | 20th " "        |
| "     | J. W. Orr ...            | "         | 20th " "        |
| "     | A. C. Hay ...            | S. C.     | 20th " "        |
| "     | F. Gadsden ...           | "         | 21st " "        |
| S.    | H. I. Beach ...          | M. E.     | 27th " "        |
| M.    | R. A. W. C. Stuart ...   | 17th I.   | 16th Feb. "     |
| "     | P. A. Carnegy ...        | S. C.     | 16th " "        |
| "     | H. G. Thomson ...        | "         | 22nd " "        |
| "     | G. J. D. Heath ...       | "         | 3rd March "     |
| "     | M. B. S. Lloyd ...       | "         | 18th " "        |
| "     | J. S. Tighe ...          | "         | 22nd " "        |
| "     | E. D. Faistlough ...     | 48th F.   | 1st April, "    |
| S.    | J. M. Miller, M. D. ...  | M. E.     | 13th " "        |
| M.    | G. C. Bartholomew ...    | 10th F.   | 11th May "      |
| "     | A. F. F. Bloomfield ...  | S. C.     | 25th " "        |
| S.    | W. Jarquhar, M. D. ...   | M. E.     | 28th " "        |
| "     | J. Law, M. D. ...        | "         | 28th " "        |
| M.    | G. F. Blair ...          | R. A.     | 14th June "     |
| "     | F. L. Playfair ...       | S. C.     | 14th " "        |
| "     | G. V. Law ...            | "         | 14th " "        |
| "     | T. R. Church ...         | "         | 14th " "        |
| "     | H. M. Nepean ...         | "         | 15th " "        |
| S.    | W. Fry ...               | M. E.     | 29th " "        |
| M.    | J. H. Tripp ...          | 76th F.   | 12th July "     |
| "     | H. C. Wilkinson ...      | 16th Lan. | 13th " "        |
| "     | A. C. Forth ...          | S. C.     | 20th " "        |
| S.    | W. J. Busteed, M. D. ... | M. E.     | 23rd " "        |
| "     | W. F. Davis, M. D. ...   | "         | 23rd " "        |
| "     | J. M. Houston, M. D. ... | "         | 23rd " "        |
| "     | W. H. Roberts, M. D. ... | "         | 23rd " "        |
| "     | J. Murray, M. D. ...     | "         | 23rd " "        |
| M.    | J. Bayley ...            | 16th L.   | 27th " "        |
| "     | C. A. Benson ...         | 45th I.   | 9th Aug. "      |
| "     | W. G. Morris ...         | 1st C.    | 11th " "        |
| "     | W. G. M. Crawford ...    | 24th F.   | 1st Oct. "      |
| "     | H. C. B. Barnett ...     | S. C.     | 10th Feb. 1871. |
| "     | W. G. Ward ...           | "         | 10th " "        |
| "     | G. C. Hodding ...        | "         | 10th " "        |
| S.    | J. Bilderbeck ...        | M. E.     | 10th " "        |
| "     | R. E. Pearse ...         | "         | 10th " "        |
| "     | G. D. Riddell ...        | "         | 10th " "        |
| "     | E. M. Ross ...           | "         | 10th " "        |
| "     | J. Dougall ...           | "         | 10th " "        |
| M.    | E. Ferguson ...          | 48th F.   | 14th March "    |
| "     | C. T. Caldecott ...      | 76th F.   | 4th April "     |
| "     | C. S. Steward ...        | 4th Cav.  | 11th May "      |
| "     | E. W. Childers ...       | R. A.     | 13th June "     |
| "     | T. I. M. Hog ...         | "         | 13th " "        |
| "     | R. H. Cunliffe ...       | S. C.     | 13th " "        |
| "     | H. Watson ...            | "         | 13th " "        |

## Gradation List of officers, &amp;c.—continued.

| Rank. | Names.                      | Corps.  | Date of rank.     |
|-------|-----------------------------|---------|-------------------|
| M.    | R. S. Gray ... ..           | S. C.   | 13th. June 1871   |
| "     | E. M. Norie ... ..          | "       | 16th " "          |
| S.    | B. T. Suffrein ... ..       | M. E.   | 27th July "       |
| "     | I. F. Barter ... ..         | "       | 27th " "          |
| "     | J. FitzGerald ... ..        | "       | 27th " "          |
| "     | A. Fergusson, M. D. ... ..  | "       | 27th " "          |
| "     | H. Griffith ... ..          | "       | 27th " "          |
| M.    | A. W. C. Lindsay ... ..     | S. C.   | 26th Aug. "       |
| "     | F. D. Walters ... ..        | 44th F. | 9th Sept. "       |
| "     | S. H. Clarke ... ..         | 21st F. | 31st Oct. "       |
| "     | J. M. Williams ... ..       | Inf.    | 15th Nov. "       |
| "     | R. C. Stewart ... ..        | 8th C.  | 14th Dec. "       |
| "     | E. D. Gompert ... ..        | S. C.   | 20th " "          |
| "     | G. J. F. Begbie ... ..      | "       | 20th Jan'y. 1872. |
| S.    | G. Williamson, M. D. ... .. | M. E.   | 20th " "          |
| "     | C. R. G. Parker ... ..      | "       | 20th " "          |
| M.    | J. C. W. Bruce ... ..       | 48th I. | 20th Feb. "       |
| "     | W. Robertson ... ..         | S. C.   | 20th " "          |
| "     | E. H. R. Chambers ... ..    | "       | 26th " "          |
| "     | R. A. Walters ... ..        | "       | 11th April "      |

(General Orders by the Commander-in-Chief.)

## Officers' Mess—Troop Ship.

No. 70.

2nd August 1872.

Under instructions from the Right Honorable the Secretary of State for India, officers proceeding home by Her Majesty's troop ships are directed to provide themselves, before embarking, with sufficient funds to pay for their messing during the voyage.

## Transport—Passage—Insanes.

No. 89.

With reference to G. O.\* No. 214 of 1871, "Passage—Insanes," and Clauses *h*, *i*, and *j*, para. 241, Transport Regulations, Part I, the attention of the Right Honourable the Commander-in-Chief has been called to the fact, that from certain commands during the past season, insanes requiring attendance were despatched to Bombay as invalids, without any special arrangements for attendance, or report to secure

\* Madras G. O. C. 29th November 1871, page 355.

proper provision for their accommodation at Deolalee or on boardship.

2. Insanes are never to be despatched as ordinary invalids. On all occasions when passage is required for insanes, a special report is to be made to Army Head Quarters, and instructions to be received as to their disposal from the Quartermaster-General.

## Passages—Warrant Officers.

No. 90.

Under instructions from Government, it is notified that

Military Department, No. 744, dated 12th April 1872, to the Quartermaster-General.

Warrant Officers, holding honorary commissioned rank, are not to be exempted from the operations of para. 16 of G. G. O.\* No. 778, dated

22nd September 1864, which withholds passages at the public expense from officers moved in consequence of regimental or departmental promotion, or when transferred to a more lucrative appointment.

2. These officers do not therefore come within the terms of† G. G. O. No. 841, dated 31st August 1870.

## Native Medical Pupils.

9th August 1872.

No. 199 of 1872.—The following General Orders by the Government of India, are re-published :—

No. 772 of 1872.—Frequent complaints having been received of the idleness and inattention of many of the native medical pupils, who, under the provisions of paragraph 41 of G. G. O. No. 550† of 1868, are attached to Medical schools and colleges for the prescribed course of study, the Right Honorable the Governor General in Council is pleased to authorise the principals of schools and colleges to withhold or to withdraw the increase of pay given after the first year's residence from those Medical pupils who, from idleness or other misconduct with their own control, have failed to make due progress in their studies.

Each case in which this authority is exercised is to be reported, through the local Government, for confirmation by the Government of India in the Military Department.

\* Madras G. O. G. 11th October 1864, No. 402.

† " " 13th Sept. 1870, No. 266.

‡ Madras G. O. G. No. 232, dated 19th June 1869.

**Station Staff Surgeons.**

No. 801 of 1872.—The following resolution by the Government of India in the Financial Department is published for general information :—

No. 1318, dated Simla, the 24th July 1872,

Read.—An office memorandum from the Home Department, No. 2678, dated the 26th June, forwarding for consideration and orders, certain papers regarding the remuneration to be allowed to Station Staff Surgeons of Sub-Divisional Cantonments for the performance of Civil Medical duties.

*Resolution* :—The Governor-General in Council is pleased to rule that a monthly allowance of Rupees 30 from provincial funds shall be made to a Station Staff Surgeon placed in charge of the Civil Medical duties of the head quarters of a civil sub-divisional officer, and that no separate fee or other remuneration shall be given to him from the civil or military department for performance of such duties.

**Exchange—Officers—British Service.**

No. 803 of 1872.—Under instructions from Her Majesty's Government, and in extension of the rules laid down by the Secretary of State for War, published in General Order by the Commander-in-Chief, No. 141 of 22nd June 1867, it is notified, for general information, that officers of the British service in India exchanging into or transferred to batteries or regiments proceeding to or under orders for India, and allowed to remain in India until their corps arrive, have no claim to receive any pay or allowances, from Indian revenues till such battery or corps is brought on the strength of the Indian Establishment.

Officers so-circumstanced will not be placed on duty of any kind.

**List of Children.**

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 31st July up to this date for securing the following rates of pension.

| Names of Subscribers. | Children's date of birth. | Sex.   | Rates of Pension secured. | To what period.  | Payments how made.             |
|-----------------------|---------------------------|--------|---------------------------|------------------|--------------------------------|
| G. Williamson         | 24th June 1872            | Female | Full                      | To 21 years      | By Donation and Subscriptions. |
| J. R. Theobalds       | 19th July 1872            | Do.    | Do.                       | To D. or M., &c. | ...                            |

MEDICAL FUND OFFICE,  
FORT ST. GEORGE,  
30th August 1872.

**BOOKS, &c., RECEIVED.**

Doctor; *July*.

Medical Press and Circular; *July 3rd, 10th, 17th, 24th*.

Bangalore Spectator; *August 9th*.

Journal des Connaissances Medicales; *July 15th; 30th*.

Medical Record; *May 15th; June 1st; 15th*.

*The Secretaries ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND, acknowledge with many thanks receipt of the following Subscription.*

E. Fawcett Esq., ... 1872-73. Rs. 20

220

THE MADRAS  
MONTHLY JOURNAL  
OF  
MEDICAL SCIENCE.

No. XXXIV.—OCTOBER, 1872.

ORIGINAL ESSAYS.

ART. XV.—*Experiments with Snake (Cobra) Poison.* By  
JOHN SHORTT, M. D., &c. &c., Surgeon, Superintendent  
General of Vaccination, Madras Presidency.

(Continued from page 22.)

No. 156.

18th January 1870.—A large cobra bit a dog in the left fore-foot and a native who came forward to cure snake-bite applied some antidote to the wounded animal repeatedly, notwithstanding which the dog was dead in 30 minutes.

No. 157.

The same day and at the same place a dog was wounded by a large cobra in the left hind leg and the same native gave it some drugs; he scarified the wound and applied the remedy to the part as well as to the scalp, which also he scarified prior to the application of the drug; notwithstanding which the dog was dead in 35 minutes.

No. 158.

On the 17th October a chicken was injected with a few minims of a solution of dried cobra poison, to test its effect; which it killed in 5 minutes. As soon as life was extinct, the chest was opened, the large blood-vessels at the root of the heart were divided and the blood caught in a wine glass.

## No. 159.

One drachm of this poisoned blood was injected into another chicken which it did not harm, as the chicken continued quite well.

## No. 160.

On the 18th March 1871, I prepared the following solution—Dried cobra-poison gr. ss. Distilled water m. 60—solve. Of the above solution I injected 20 m. into a full grown male dog, at 3 p. m. the same day, and I had the animal well fed and taken care of—Scarcely any effect was evidenced. On the 13th May 10 minims were again injected at 4-30 p. m. On the 18th May 17 minims of the same solution were again injected at 1 p. m. The same day 3 minims of the same solution were injected into a quail to test its integrity, which it killed in 20 minutes, but the dog continued well.

On the 4th July half a grain of the dried cobra poison dissolved in a drachm of water was injected into the same dog, at 11-22 A. M.; towards evening the animal grew restless and at night it began to grow drowsy—head drooping, tongue at times lolling out, the fore limbs paralyzed. It continued much in this state and died the next morning, the 5th July, at 6 A. M.

## No. 162.

At the same time and place to test the solution that was prepared and used for the dog, the tube that contained it was washed out and the washings injected into a chicken under the wing, at 11-24 A. M. and the chicken was dead in two hours.

The object of Experiment 160 was to see if the system would become accustomed to the action of the poison, but in this case the intervals were irregular and too prolonged. This arose partly to my frequent absence from Madras, and in the last dose I miscalculated the strength of the dried poison. I hope to repeat this experiment more carefully on a future occasion.

## No. 163.

On the 18th May I injected 3 minims of a solution of cobra poison originally prepared for the dog in experiment 160 into an avadavat, which it killed in 10 seconds—which proves that the dried poison even in solution did not suffer by being kept.

## No. 164.

6th July 1871.—To a *Daboia Elegans*, Russel's viper, two drops of carbolic acid were administered at 8-45 A. M.

There was some quivering motion for a time and in 20 minutes it was dead—weight of snake 8 ounces, length 37 inches.

## No. 165.

To a common water snake *Tropidonotus schistosus*, 2 drops of carbolic acid were administered. There was some quivering about the body for a while, and it was dead in 10 minutes. Weight of snake 15 ounces, length 39 inches.

## No. 166.

At the same date and place, to another *Daboia Elegans*, a solution of strychnine (1 grain to 10 minims) was poured down its jaws. In 2 minutes the snake took on a regular serpentine form, became stiff, and the muscles were hard as a piece of board; and in 5 minutes more it was dead. Weight of snake 36 ounces, length 42½ inches. Was full of eggs with matured young in them.

## No. 167.

To another *Tropidonotus schistosus* 3 minims of the same solution of strychnine was given at 9-10 A. M., and in 2 minutes it took on the serpentine form and was dead in 2 minutes more, when it was quite stiff and hard. Weight 2 ounces, length 21 inches.

## No. 168.

One drachm of common bazar tobacco was infused in 2 ounces of boiling water and, when cool, about half an ounce of the infusion was poured down the throat of a cobra. In 2 minutes a shrinking of the body of the snake took place, it gradually grew quite stiff and in the course of 5 minutes more to all appearance it was dead. It was laid by, but when examined the next day it appeared quite well and as active as ever. Weight 20 ounces, length 50 inches.

## No. 169.

About an ounce of the tobacco infusion was poured down the throat of another cobra, as well as some of the leaves from the infusion, and in 2½ minutes a shrinking, followed by stiffness as in the previous case, took place. On examination the next day it was quite extinct. It is necessary to remember that tobacco stupifies and produces all the appearance of death from which snakes frequently recover in the course of some hours. This has occurred repeatedly in my experience.

## No. 170.

12th October 1871.—A sheep was bitten by a cobra and two minutes after some antidote was given to it by a native who was brought by G. Johnstone, Esq., Barrister-at-Law. The sheep urinated in about 3 minutes after. The scalp was scarified and medicine applied to it. Animal lame, pupils dilated, restless, gets up and lies down again, defæcated; medicine repeated several times. At 5-30 p. m. animal was stretched on its left side wagging its tail with outstretched head and neck. At 5-35 p. m. it was dead.

## No. 171.

13th October.—The same native returned with another sheep the next day. He was not satisfied with the last experiment. The sheep was wounded at 11-55 a. m. in the skinfold of the abdomen by a large cobra, and notwithstanding the persistent applications of various remedies it died at 12-40 a. m.

## No. 172.

17th October 1871.—A Mr. Howell produced a Mahomedan who was willing to test a reputed antidote in his possession with which he stated that he had cured several cases. He brought another sheep which was wounded at 12-20 a. m. by a full sized cobra, and a white powder, which to me had all the appearance and taste of alum, was administered. Notwithstanding repeated doses, the sheep died in 50 minutes.

## No. 173.

September 1871.—A native doctor as he styled himself by name Teroovengada Charry came all the way from Salem to test a reputed antidote. He brought a sheep which was wounded by a cobra at 3-25 p. m. to which he administered some mixture he brought with him, which was given repeatedly; the sheep was scarified and had some stuff rubbed into it; the tips of the ears were cut off. Notwithstanding the animal was dead at 3-55 p. m.

ART. XVI.—A Case of Wound of the Chest implicating the Lung, treated by Assistant Apothecary G. W. EATE.

P. Nokiah, a ryot, aged about 32 years, a spare-made man, was admitted into the Police Hospital on the morning of the 22nd February 1872. He was sent by the police from a village 10 miles distant, and was said to have been stabbed between 11 and 12 o'clock at night.

On examination (7 hours after) I found the man considerably weakened from loss of blood and tightly bound round the chest with his cloth, which was saturated with blood. On removing the cloth, a penetrating wound of the chest was seen, about an inch in length, between the fifth and sixth ribs in a line with the axilla of right side. The air passed freely through during respiration with a blowing sound accompanied with a free discharge of bright arterial blood. There was considerable difficulty of breathing which was chiefly abdominal; a tickling cough and expectoration of frothy bloody mucus. Pulse small and weak. On auscultating the chest, at and around the seat of injury, a loud rough crepitation was distinctly audible.

There were other minor but superficial wounds of the chest.

Treatment.—The wound having been cleaned it was dressed with carbolic acid and oil 1 to 8 parts on lint and a chest bandage applied and the patient placed on the wounded side.

R Tinc. Opii. m xx.

„ Digitalis m xx.

Aquæ..... 3 iv.

3 i every 3rd hour.

Vespere.—Is much the same; complains of pain in the side; slight hæmorrhage still taking place; pulse small and weak; bowels have not acted. To have Ext. opii gr. ii in two pills, one to be taken at bed-time, and repeated during the night if necessary.

23rd February.—Took both the pills; slept pretty well during the night; complains of pain over wound; hæmorrhage entirely ceased. Respiration hurried and slightly oppressed; no cough; skin harsh and dry. Pulse small, soft; auscultation, moist crepitation faintly heard over anterior and posterior portion of right lung, percussion note dull.

Cont. carbolic acid and oil dressing.

R Magnesie Sulphatis 3 vi.

Antimonii Tartrati gr. ʒ.

Aquæ menthæ pip. 3 vi.

3 i every 2nd hour.

I was called to see him at 3 p. m. when he complained of pain along right lumbar region. Bowels have not acted, Fomentation to back. Omit mixt.

R Calomel. gr. viii.

Ext opii. grs. ii.

Mix and make 4 pills.

One pill every 2nd hour.

*Vespere.*—Pain relieved; respiration hurried; skin warm, dry; pulse small, weak.

Cont. pills.

24th February.—Passed a fair night, and states he feels better; respiration slightly hurried; skin warm; pulse 108, small, weak. Bowels have not acted; no discharge from wound, which appears to be closed; complains of slight pain over seat of wound. Auscultation; absence of respiration, murmur over anterior and posterior part of right lung, percussion note dull.

R. Cl. Ricini ℥ i.

Aquæ menthæ pip. ℥ i.

Stat. sum.

Cont. carbolic acid and oil dressing.

*Vespere.*—Bowels have acted 3 times, feels easy; skin warm; pulse 102, small, soft.

Ext. Opii. gr. ii.

Horâ somni sum.

25th February.—Bowels moved once this morning; slept well during the night; slight pain over wound only, which is healing, feels easy. Respiration normal; pulse 90, moderately full, soft. Auscultation; respiratory murmur faintly audible with occasional moist crepitation to within a few inches of wound; percussion note clearer.

Cont. carbolic acid and oil dressing.

*Vespere.*—Respiration easy; skin cool; pulse 84, moderately full, soft; bowels moved 3 times.

Ext. Opii. gr. ii.

Horâ somni sum.

26th February.—Slept well; respiration easy; skin cool; pulse 84, of fair volume and strength; no pain complained of over wound, which is healing. Auscultation the same as yesterday.

Cont. carbolic acid and oil dressing.

*Vespere.*—Respiration easy, skin cool. Pulse 84, of fair volume and strength.

Ext. Opii. gr. i. h. s. s.

27th February.—Much the same as on last report.

Cont. carbolic acid and oil dressing.

28th February.—Slept well, complains of pain over seat of wound, and on taking a full inspiration, a little discharge of sanious pus issues from wound. Skin cool, pulse 88, of fair volume and strength.

Auscultation; respiratory murmur fairly audible over back and front of chest, to within about a couple of inches from seat of wound.

Cont. carbolic acid and oil dressing.

To have Ext. Opii. gr. i. h. s. s.

29th February.—Slept well, slight pain over seat of wound, respiration easy. A little discharge of sanious pus observed on removing the dressing; pulse 86, moderately full, soft. Auscultation the same as yesterday.

Cont. carbolic acid and oil dressing.

1st March.—Slept well, respiration easy, feels better, but still weak; very little discharge observed; pulse 82, moderately full, soft. Auscultation; respiratory murmur becoming clearer.

Cont. carbolic acid and oil dressing.

2nd March.—Slept well. Pulse 82, of fair volume and strength; complains of pain over posterior surface of chest, where moist crepitation can distinctly be heard; wound healing.

Fomentation to chest.

Cont. carbolic acid and oil dressing.

3rd March.—Slept well; respiration easy; pulse 82, moderately full, soft. No crepitation over posterior surface of chest. Respiratory murmur audible. Wound healing, a few exuberant granulations touched with argenti nitras.

Adhesive straps to wound.

4th March.—Improving.

Cont.

5th March.—Doing well, passed a fair night; wound nearly healed, pulse 70, of fair volume and strength. Dulness around wound clearing up, respiratory murmur faintly audible. Wound healing, a few exuberant granulations touched with argenti nitras.

Cont. strapping.

6th March.—Slept well, pulse 72, moderately full, soft. Wound nearly healed.

Cont. strapping.

7th March.—Wound healed; feels quite well, but weak. Pulse 72, moderately full, soft. Respiratory murmur distinctly audible over back, front and side of chest.

From this date he gradually began to improve, and as he still complained of being weak I kept him in Hospital, when

the tincture of the muriate of iron was given in small doses. He was discharged from Hospital on the 6th April 1872.

*Remarks.*

His deposition was taken by the Sub-Magistrate, on the day of admission, and when asked whether he thought he would die, he said no. He shewed a good deal of "pluck" throughout. I saw the knife produced at Court where my deposition was taken, and judging from the size of the wound I was of opinion it must have entered the cavity of the chest at least an inch and a quarter. The carbolic acid appears to have acted very well in this case in preventing suppuration by excluding the air. A great care was observed while the dressings were being renewed to have as little exposure as possible. The slight effusion that did take place appears to have become gradually absorbed, without even the aid of mercury or the iodide of potassium.

ART. XVII.—*Report of the Medical Committee appointed to investigate the causes of the Epidemic Fever which has prevailed in the Provinces of Coimbatore, Dindigul, Madura and Tinnevely, during the years 1809, 1810, and 1811.*

(Concluded from page 198.)

SECTION SIXTH.

*The mode of treating the disease, which has been found the most successful; with cautions regarding the best means of preventing relapses.*

When the epidemic fever first shows itself, which it frequently does, by a regular attack of an intermittent, we lose no time, on the body being cool, in clearing out the bowels by administering a purge, which may either be twenty-six\* grains of fine powdered jalap and

\* It must here be observed that the doses of medicine mentioned in this report are for a full grown European; for the natives who are weaker in constitution, we usually order about three-fourths of the quantity.

a scruple of crystals of tartar well rubbed together; a full dose of the sulphate of Magnesia and Manna, or an ounce of the Oleum Ricini. Soon after the medicine has ceased to operate, we prescribe the Cinchona, and there is to be observed this general rule—respecting it, that the nearer the time of giving the last dose is brought to the expected period of the attack of the cold fit, the more likely will it be to accomplish the purpose intended. From six to eight drams of the fresh powdered bark, taken in substance, will commonly be sufficient to keep off a fit; but we have known many cases in which a dram or two more was required; and we think that when the whole can be given, within the last five or six hours, before the return of the shaking fit is looked for, it is more likely to prevent its recurrence than when it is taken in smaller doses and at longer intervals. Some stomachs, particularly in native habits, cannot bear the bark in plain powder; in such cases we have found it beneficial either to add a small portion of ginger to each dose, or to change the substance for the infusion or decoction, adding to it a certain quantity of the tincture and a little aromatic confection. The whole of the following taken in divided doses before the time that the fit is expected will often prove successful.

R. Infus. Cinchonæ ʒ x.  
Tincturæ ejusdem ʒ vi.—ʒ i.  
Confect. aromat. ʒ i. Misc.

The bark in substance, although in some habits it has an opening quality, in others proves quite the reverse. To obviate the last, which must even in fever cases be attended with bad consequences, we generally add a few grains of Rhubarb to each dose, or what answers just as well, and without irritating the stomach, we recommend the use of laxative injections. Any purging effect from the Cinchona may be easily prevented by adding four or five drops of laudanum to each dose. At the commencement of the hot fit benefit is often derived from thirty or forty drops of the medicine just mentioned, given in a small glass of water, in conjunction

\* Pills composed of Calomel and Rhubarb or of Calomel and compound Extract of Colocynthis, may also be used for this purpose. Though when there appears to be considerable nervous irritability we are unwilling to give mercury. The strength of the purging pills may be (for a full grown person) five or six grains of Calomel and sixteen of Rhubarb, made into pills or six grains of Calomel and twelve of the compound Extract of Colocynthis made into as many.

with half a dram or more of the Alcohol Ammoniatum Aromaticum or with half an ounce of the Aqua Acetatis Ammoniacae. This appears not only to have the effect of shortening the fit but of sustaining the strength of the patient and enabling his stomach to bear the bark. When the perspiration begins to flow, the drink\* ought to be taken tepid, but during the time that the skin is dry and the temperature of the body at its greatest height, cold water may not only be taken with safety, but we think with advantage.

The bark is not to be left off on the fever disappearing, but ought to be continued for eight or ten days longer to break as much as possible the habit of recurrence; for this purpose three, four, or more doses on the days the fit used to return, will be quite sufficient.

Much has been said with regard to the propriety of giving repeated purges in intermittent fevers, and there are some practitioners in this country who are in the habit of ordering them very freely. However necessary we deem it to be that the bowels should in every instance be kept perfectly open, and that over secretions of bile should be carefully worked off, we are altogether inclined to distrust the frequent use of strong remedies of this class, not only as we have known them, from our own experience, productive of certain mischief by occasioning irritation and debility, but as we are mindful of the lesson that was taught us early in life, by the writings of the judicious Hoffman; † who particularly recommends, that in agues the bowels should be kept open by the gentlest laxatives given with the bark or by clysters.

Slight enlargements and indurations of the spleen will sometimes be left after attacks even of the most regular intermittents and in habits otherwise sound; such are of little consequence and commonly disappear rapidly on the disease taking its final departure, without further precautions than attention to proper diet and the state of the bowels.

We have hitherto been supposing that medical aid has been sought (as it ever ought to be) at the very commencement of the disease, when a proper recourse to the bark

\* Barley water, rice gruel, or what is pleasant, an infusion of lemon grass (Andropogon), are the most proper. For old people or those of cold and delicate constitutions, a good strengthening drink during the sweating stage may be made with one and a half ounce of an infusion of sage and one dram of the Aqua Carbonatis Ammoniacae.

† See Med. Rat. Syst. Part I. Cap. I.

after free evacuations have been procured, will often put an entire stop to the disorder; but unfortunately this is not always the case. The disease has perhaps been allowed to run its course\* for days together, without any thing having been done to check it. On the contrary, improper food may have been taken, bile pent up, spirituous liquors drank, in fact every thing done which ought not to have been done; the consequence of which must be that abdominal congestion and obstruction of the greater viscera soon takes place and an obstinate and dangerous state of the disorder is thereby most certainly induced.

In such distressing circumstances there is often little immediate advantage to be expected from medicine, without at the same time having recourse to a change of climate (as has been strongly recommended in similar cases by Dr. John Hunter† in his valuable "Observations on the Diseases of the Army in India.") Then calomel‡ will in many cases be found of a greater service (particularly if the habit is still pretty strong and the bowels firm) on the mouth becoming affected with the medicine; some of the most unpleasant symptoms will, in all probability, disappear, when the bark, should it still be necessary, can be administered with more safety.

There is a description of medical men in this country who suppose that in hot climates bark given for intermittent fever has the effect of bringing on abdominal obstruction, if calomel is not at the same time daily administered; but to this opinion we cannot from our own experience subscribe. If full and proper evacuations are procured at the commencement of the disease, if over secretions of bile are purged off, and if great care is at all times taken to keep the bowels open, we see no good reason why this acrid mineral should be given, however necessary it may be to alter the habit. In more serious attacks it is an irritating and debilitating medicine, it is extremely apt to sicken the stomach and produce dyspepsia, and must therefore prove particularly objectionable at all times in delicate

\* This we have no doubt has been the chief cause of the great mortality occasioned by the epidemic fever, as thousands in remote situations where no medical aid was at hand must have had their constitution ruined before they could receive the smallest relief.

† See his work, pages 214, 215.

‡ About 4 or 5 grains, made into two pills, one of which is to be given at night and the other in the morning. Should these purge, half a grain of opium may be added to the whole, or more if necessary.

habits, and often in others too when we should as much as possible preserve the tone of the stomach, and prevent it from rejecting the bark. No obstructions of this nature, we are rather inclined to think, arise from other causes, such as a neglect of timely and free evacuation by stool and, perhaps more certainly still, from repeated, long and severe cold stages having been allowed to take place before the malady was checked; and hence the almost constant affection of the spleen or liver which we see consequent of obstinate quartan agues and which was particularly instanced in the Native Hospital of Dindigul. In support of what we have here advanced we shall bring the authority of one of the most enlightened Physicians of the present age Dr. Jackson,\* who in speaking of the Bark says "I was early aware of these objections and watched narrowly that I might discover its real effects and I am now warranted in saying that it has every right to be considered as a specific in ague and fever, while it is totally free from the imputation of occasioning dysentery, dropsy or visceral obstructions; these complaints were always the most frequent when this remedy had been the most sparingly employed."

We not unfrequently meet with very obstinate cases of intermittent fever, though apparently unaccompanied by any peculiar derangement of the abdominal viscera; in such cases, so inveterate is the habit of recurrence, that no quantity of Bark that can be taken seems to have any good effect; against these, many remedies have been used with various success.

We have occasionally tried with advantage the Vitriolic Ether (as recommended by Mr. Davidson in the 5th Volume of the "Medical Facts and Observations") to the quantity of a dram and a half on the approach of the cold fit; and we have also known benefit derived from a full dose of Laudanum given an hour before the expected attack, practice first taught us by Dr. Blare.†

In favor of the use of white Vitriol in agues we cannot say much. We learn from Mr. Hastie‡ that he gave it a fair trial in the Hospital at Dindigul in May last but thought,

\* See Dr. Jackson's Treatise on the Fever of Jamaica, pages 317-318. See also what he says against the notion of bark producing obstruction at page 336.

† See his Observations on the Diseases of Seamen p. 414 3rd Ed.

‡ See his letter No. 7 which accompanies this Report.

though in a few instances it \* appeared to do good, that it was apt in others to produce much general uneasiness, headache, nausea and a most disagreeable sensation at the upper part of the oesophagus.

An emetic given a little before the cold fit was expected has occasionally kept it off.

Arsenic which for some years past has come much into vogue in England, has been used amongst the Hindoo Medical Practitioners, from time immemorial; and they have great confidence in its virtues in intermittent fever. We have been in the habit of occasionally prescribing it in solution as recommended by Dr. Darwin to the extent of eight drops three times in the day, but we do not much approve of the practice.

In recommending the use of the cold effusion during the hot fit, we have been more fortunate; and are of opinion that it is a powerful remedy by giving a check to the disease, and we have, in several instances, known daily immersion in the sea, prove the happy means of putting an entire stop to agues which had baffled every other exertion that had been made to conquer them.

A blister to the nape of the neck will often prevent the recurrence of the cold fit, and, in cases of great debility when the stomach rejected almost every thing, we have known the patient saved by having a warm plaster applied to his stomach and taking large doses of the tincture of Bark, each dose containing six or eight grains of ginger: or the Bark, in such cases, may be given in an infusion of ginger; or, what we have occasionally known prove very beneficial, powdered ginger may be taken in an infusion of the Great root† or Gentian without any bark at all.

Notwithstanding all these remedies however, the disease will sometimes prove very obstinate‡ and if not checked run on to coma and death.

In such cases Calomel§ (or the blue pill), even when no obstruction has appeared, is often found to produce the best

\* It was given in the quantity of about three grains every three hours, or one grain every hour, commonly about twelve hours before the attack was expected.

† The Justicia Indianlata.

‡ Mr. Tate, Surgeon of Trichinopoly, whose professional talents are well known, has informed us that in obstinate cases of intermittent fever, when he had tried everything else he could think of without success, he had succeeded in checking the disease by giving at bed time a full dose of the Elixir Sacrum; or as it is now called the Tinctura Rhei et Aloes.

§ Continued till the mouth is a little affected: should it purge, a small quantity of opium may be added.

effects; and not so much by putting a certain stop to the recurrence of the attack, for in accomplishing this end it frequently fails,\* but by inducing a new action and thereby bringing about so great a change in the habit that the Cinchona which previously had been given in vain will now be administered with a happy effect.

In the latter periods of intermittent fever, particularly if free evacuations have not been procured in the earlier period of the disorder, distressing and alarming bowel affections often take place, not attended with much straining but of an obstinate and debilitating nature. Gentle opiates, given in weak, eretaceous mixtures made cordial by some aromatic, are sometimes of service; but it is but too often a fatal symptom particularly amongst the natives.

Edematous swellings and ascites also not infrequently supervene from pure debility; these, when no particular abdominal indurations appear, are best treated by repeated small doses of tincture of squills given with a little ginger and tincture of bark, having recourse at the same time to frequent frictions with dry flannel and proper attention to the ingesta. But should the bowels be altogether firm, and there is any reason to think that the dropsy arises rather from visceral congestion than weakness, calomel may be given in conjunction with the powder of squills in small repeated doses or, what may be safer as less likely to bring on flux, the common mercurial pill with the addition of the dry squill powder. The following we have prescribed with advantage.

R. Pilule Hydrargyri grs vi.  
Pulveris Scillæ siccat. grs iss.

Misce ut fiant pilulæ duæ. Sumatur una bis in die.

These may be continued for a longer or shorter period according to circumstances, adding, should it be necessary, a little opium and at the same time paying the strictest attention to proper diet and the use of dry friction.

When any person is seized with remittent or intermittent fever, who has previously suffered much from liver affections or dysentery, and who may still have diseased abdominal

\* We know many instances of the fever continuing to recur while the mouth was affected by mercury.

† R. Tinctura scillæ..... gtt x.  
Do. cinchonæ..... ʒ ii.  
Pulveris Zingib..... grs viii.  
Aque fontæ..... ʒ iij.  
Misce ut fiat mistura ter in dies sumenda.

viscera, a most complex and dangerous morbid condition may be expected, requiring the nicest treatment; as each succeeding attack but too surely aggravates the old derangement, and the uncertain state of the bowels is as certainly discouraging to any positive hopes we might entertain from the use of the bark. In such a predicament, indeed, this medicine is to be used with the greatest caution; and the infusion, with the addition of a little of the tincture, is to be preferred to the substance; but when there is much uneasiness or pain in the right side even these should be desisted from, a blister should without loss of time be applied to the part affected and mercury had recourse to; at such time however as the bowels are often much out of order, the following persevered in for a short time we think preferable to plain Calomel as an alterative.

R. Pilul. Hydrag. gr. vi.  
Calomel. grs. ʒ i.  
Pulv. Ipecac. gr. iiii.

Misce ut fiant pilulæ tres; sumatur una ter in die.

To these a small quantity of opium may be added, should it be necessary; resuming the use of the Cinchona, if required, after the hepatic symptoms are removed; in other cases, if the attacks of fever continue to recur, we have even given it at the same time with the pills, especially if the liver complaint or flux was rather chronic than acute.

Sometimes in complaints of this nature that have remained obstinate we have known an issue in the side of great service, together with a judicious course of bitters and gentle tonics; we say judicious, because we are aware that mischief is often done by an indiscriminate use of the remedies.

A change\* of air we have constantly found of so great advantage in promoting the recovery of all such as have been attacked with Remittent or Intermittent fever that we never fail to recommend it to those who have it in their power to try it.

It is almost needless to add here how much diet ought to be attended to in the cure of fever. All crude vegetables and austere fruits are to be cautiously avoided, as should food of a heavy nature or that is difficult of digestion. Light puddings, clear broths, with bread or rice are proper; on the well days

\* Celsus had so high an opinion of the benefit to be derived from a change of air in many cases of sickness that he says, rather than not change it, it is better to go from an air acknowledged good to a bad climate. Vide Celsi Lib II. Cap I.

a little tender animal food, with two or three glasses of wine, or brandy and water made weak, may be safely taken; gentle exercise is useful and some people, particularly such as are subject to hepatic affections, often derive much benefit from wearing flannel next the skin; which prevents any bad consequences from sudden chills and keeps up a nearly uniform temperature on the surface of the body. Above all things the state of the bowels is particularly to be attended to and excess of every kind carefully shunned.

When an Intermittent is preceded, which it often is, by a slight febrile attack, more or less continued, and usually of one or two days duration, we prescribe an emetic\* if the state of the stomach admits of it. After its operation has ceased we evacuate the bowels by means of a smart purge, and for this purpose nothing answers better than a full dose of the compound powder of Jalap, salts and Manna; or Jalap and Calomel, giving on the evening of the same day a draught prepared with half an ounce of the Aqua Acetatis Ammoniae, two drams of common Syrup and thirty drops of Laudanum, or one composed of one dram of Antimonial wine and as much of the Spiritus Etheris Nitrosi.

Should the patient still continue so feverish on the next morning as to prevent his using the bark in the way already recommended, he may take the following in doses of an ounce and a half every two hours.

R. Mistur. Salin. .... 3 iss.  
Tartar. antimon. .... gr iss.

Or it may be made without the Emetic Tartar, adding instead of it half a dram of purified nitre.

When from the appearance of symptoms formerly described (in section 5th) it is evident that a fever of the remittent kind may be expected, the stomach is often in so irritable a state that it would be highly improper to give an Emetic. In such cases we order at once the following pills.

R. Calomel. .... grs vi.  
Pulv. Jacob. .... gr iiij  
Misce et divide in pilulas tres.

The whole of which may be taken in the course of twelve

\* This may either be of Tartar Emetic or Ipecacuanha, a scruple or fifteen grains of the latter will be sufficient, the first is best given in small divided doses.

R. Mistur. Salin. 3 i.  
Tartar. Antim. grs. iii. misce.

Assumatur 3 ies omni quadrante hora donec non excitatur vomitus vel alvus solvatur.

hours. These will produce copious evacuations and may also perhaps bring on a slight degree of diaphoresis, which ought to be encouraged by taking frequently a little tepid drink. On the second\* day, when the paroxysm will in all probability be found every way more severe than on the first, no time is to be lost in having recourse to mercury, the remedy which at such times can best be relied on for producing a regular intermission; seven or eight grains of Calomel with three or four of Camphor† are to be well rubbed together and made into four pills, one of which is to be taken every three hours during the day, these will often soon have the desired effect by inducing a desirable change in the habit and so favorable a remission or intermission of fever that the bark can be given with safety.

Notwithstanding this mode of treatment however we have found that in some instances the epidemic fever in its remittent form has proved a very severe and dangerous disease. Where no positive advantage appears to be derived from the use of the pills just mentioned, we think it advisable no longer to delay the use of the Cinchona, even before a regular intermission has been obtained, as it is the surest means of sustaining the strength of the sufferer. The decoction or infusion, with a small portion of the fine powder in it and a little of the tincture, will then be the best form: giving from time to time what light nourishment‡ can be taken.

In the more extreme stages of this malady blisters are often of great service by rousing to recollection and exciting the *vis vite*, the bowels are to be kept open by mild injections to save the stomach and grateful cordials are to be united with the bark.

Relapses of the Epidemic fever in all its forms and types have been extremely common and troublesome; these seem to be in a great measure occasioned by the habit of recurrence that has been acquired during the course of the disease; they are apt to happen too, on any particular change

\* At this period of the disease we have in some instances been able to check its further progress, by means of the cold affusion, while in others it altogether failed in producing the desired effect.

† There appears to be something in the nature of Camphor which peculiarly fits it for being given in conjunction with Calomel; it soothes in some measure the acrimony of this mineral, tends to calm the nervous system and gives the fluids a tendency to the skin.

‡ With regard to wine we must recommend that it be given with great caution in every instance, and if it appears to increase the febrile heat and excite delirium (which it often does) it is altogether to be abstained from.

of the weather or to be brought on by irregular living, repletion, fatigue, cold bathing in damp weather or improper exposure to the heat of the sun or dews of the night. Costiveness, pent-up bile and indigestion we have also known frequently to induce a return of the disorder, when it appeared to have taken its final departure.

With regard to the moon producing relapses of fever, we cannot speak with much confidence. This influence was first taken notice of in India by Dr. Lind\* many years ago, and since his time more particularly by Dr. Balfour, who has written on the subject. The latter is of opinion "that the three days which precede and the three which follow the new or full moon are remarkable for the invasion and relapses of fever; that the days of the full moon and the day of the change of the moon are the most remarkable of all and further that the days which follow are in general more remarkable than those which precede."†

It is singular that by Dr. Jackson's own observations in America it appeared that the four days preceding,‡ not following, the full moon were more particularly distinguished for febrile attacks: these differences however with doubts on this point, doubts still more strongly felt, from a knowledge of further opposite opinions which we shall here mention. The excellent Dr. James Clark§, long a most accurate observer in the West Indies, says that he ascribed those periodical returns of intermittents rather to a certain habit contracted in the constitution than to any influence of the moon on the body; on the other hand, as far as regards the more immediate object of this report, Mr. Hastie in a letter¶ addressed to the Superintending Surgeon of the southern division has these words. "About two days before the change of the moon took place, as last month at Dindigul, relapses were frequent amongst convalescents."

But then again, in a communication which the President of this Committee, received some years ago from Mr. Currie now surgeon to the Residency at Hyderabad, we learn, that by a correct account of attacks and relapses of fever in the Hospital of the 1st Regiment of Native Cavalry during a period of nearly two years in the Ceded Districts, Mr. Cur-

\* See his "Diseases of Hot Climates."

† See Dr. Jackson's Treatise on the Fevers of Jamaica, page 95.

‡ See the same, page 98.

§ See his treatise on the Yellow Fever of Deminica, page 96.

¶ See No. 7 a letter which accompanies this Report.

rie clearly ascertained that so far from a greater number of relapses or attacks happening at or near the full of the moon they were least common at these times.

To prevent relapses of fever we know nothing so likely to be of advantage as a change of air, particularly by a sea voyage. To effect the same happy purpose great attention to the state of the body is absolutely necessary: taking occasionally a little tincture of Bark, together with a small quantity of that of the Great root will be of service; and nothing can more certainly be so than the carefully avoiding every kind of excess.

At an early period after our appointment we had occasion to regret that much mischief evidently arose from a deficiency of medical aid in many of the smaller villages and remote corners of the southern provinces, and then had the honor of calling to the attention\* of the Medical Board certain short rules which we thought could easily be followed by the natives themselves, without the immediate presence of regular Vytians.

We were much flattered to find that what we then recommended was so much approved of by the Medical Board, and subsequently by the Honorable the Governor in Council, that the latter lost no time in ordering the most prompt obedience to our various prescriptions and cautions throughout the whole of the districts in which the fever at that time raged and we have now the most heartfelt satisfaction in saying that our advice was not bestowed in vain. The natives in different quarters have acknowledged the great benefit that has been derived from the medicines we brought to their notice and confess that they believe them to have saved many lives.

We shall conclude this section, by subjoining a list of a few of the many articles which are used in intermittent fevers by the Malabar medical practitioners; but first let us testify our great joy at now having it in our power to say that by every account we can obtain we learn that the epidemic fever has ceased from its work of destruction; and that the few unfortunates who still suffer are merely those who having escaped with life from the first violence of the disease, are now lingering under the visceral derangements which it was too apt to leave behind.

1st.—Vullay Pashanum (white arsenic) of this they are

\* By letters dated 29th of April and 12th of May 1811.

in the habit of giving about the fifteenth part of a grain twice daily.

2nd.—The bark of the *Soimadoo*\*. This is particularly used by the inhabitants of the northern Ghats, we have found that when taken to the extent of five or six drams in the course of the day it produced vertigo and other nervous symptoms, without being by any means so valuable in other respects as the Cinchona.

3rd. The bark of the *Vaypooonaram*†. This is much used by the Tamool Physicians, it is very bitter and is a powerful tonic.

4th. The nut called in Bengal *Caat Caranja*, and by the Malabars *Callackie kaie*, it is the produce of the *Cassalpinia bonducella*.

5th. *Chookoo* (Ginger.)

6th. *Womo* (Siron ammi.)

7th. *Sitturettie* (*Costus spicatus*, Rotler).

8th. *Tsyragum* (*Cuminum cymipum*).

9th. The bark of the *Carooowelimputtay*, it is called *Babul* in Hindostani, and is obtained from the *Acacia Arabica*.

10th. And last, the *Corte du Pala* or Tellicherry bark which is much used on the Malabar Coast.

## SECTION SEVENTH.

*Observations respecting the measures that might be adopted to prevent as much as possible the recurrence of so great a mortality from a succession of irregular seasons.*

To correct the state of the atmosphere, when it has become noxious from such causes as we have enumerated, it will be readily allowed, is not within the power of man; but it must at the same time be granted that this evil will be attended with infinitely worse consequences under certain circumstances than under others.

We have observed in a former part of this report that in all low marshy situations the epidemic is apt to rage with great violence; hence the propriety of self-evident of our now recommending that, under such circumstances,

\* *Swietenia Febrifuga* (Roxb.)

† *Melia Azadirachta*.

be done with convenience in future, villages and hamlets should be built on sites that are high and dry. We have also seen that in places close to mountains, which are ill ventilated or covered with thick jungle, the disease was very prevalent; a circumstance which leads us to express our opinion that the greater the distance towns and dwellings of every description are from these high lands, the better chance will those have who inhabit them of escaping the fever.

It is a well established fact that during such calamitous periods as that which we now contemplate with sorrow, the lower\* classes ever suffer most, the natural consequence no doubt of their not enjoying the comforts which the more affluent can command; a fact too corroborated on the present occasion by our having in every instance remarked that those individuals were the most healthy who were best lodged, fed and clothed; in the Coimbatore country where the greater part of the inhabitants sleep on mats and in bleak weather have cumbles to cover them, the epidemic fever was less destructive; as also in the more central tracts of the Tinnevely district and particularly in those beautiful and thriving villages, on the banks of the Tambarapourne where an active and superior race of people seem to receive the just rewards of their labour and industry. How much then ought it to be the study of every Government to mollerate as much as possible the condition of the inferior ranks. The ample advances of money that have been made to relieve the distress of the cultivators in these Provinces testify how well this is understood by the supreme authority at Madras and we shall here take the liberty of suggesting what we conceive ought further to be done to amend the condition of the native inhabitants.

1st.—To give them every encouragement to build their streets wide and regular.

2nd.—To recommend tiling in place of thatching the roofs of houses, to such as can afford it.

3rd.—To point out the benefit of sleeping on cottles (truckle-beds) instead of lying on the damp ground.

4th.—And lastly, to have strongly urged, to men of all castes, the advantages that are to be derived in moist and bleak weather from being covered with cumbles.

It has been remarked by a very accurate observer, Dr. W.

\* See Malthus on Population. Vol 2nd page 59.

Fowle,\* that intermittent fevers in the West Indies are ever the most common and dangerous in those islands which are the least cultivated. Dr. S. Farr† in his translation of the Epidemics of Hippocrates seems to have thought so highly of the influence of agriculture that he has introduced it as one of the means by which a distempered state of the air may be remedied or prevented: and Dr. A. Wilson‡ in his valuable observations on the influence of climate, has these words (in speaking of America) "The European inhabitants who were transplanted to that continent, seemed for a time to degenerate; but the face of the country being by degrees changed from woods and morasses to a clear surface and cultivated fields and consequently from an impregnated to a pure atmosphere, those appearances have subsided and the natural effects have begun to flow from these changes, which there was every reason to expect from its cultivation and climate; and the more quickly it is deprived of its woody covering the more rapid will its improvements be in every thing that hath distinguished the European nations in equal latitudes."

With such authorities then before us, we shall here venture to offer our opinion with some confidence. That nothing is more likely to prove advantageous to the climate of our Indian dominions, than the clearing away of jungle, the draining of useless swamps and an extensive cultivation of waste lands; and we are extremely happy to learn, that at this very time, those objects occupy the serious attention of the Governor in Council of Fort Saint George.

In a communication which we made to the Medical Board from Bhavanie, in the month of May we expressed a belief that many deaths had been occasioned by the ignorance of the Native Medical Practitioners, regarding the best method of treating the epidemic fever and we then recommended, with a view of obviating the mischief thence arising, that the Vyteans should attend for a time to the personal instructions of such Surgeons or Assistant Surgeons as might be stationed nearest to their respective villages: but we have since thought that a much more eligible method might be adopted to accomplish the same end by a concise and distinct description of the European method of treating fevers (and of the most

\* See his Treatise on the different Fevers of the West Indies, page 1.

† See his Preliminary Discourse from pages 35 to 43.

‡ See his work, pages 275, 276.

common diseases of these countries) being translated into Malabar, and the work distributed gratis amongst the Hindoo doctors.

In a former Section we mentioned our great joy at having had it in our power to say that the ravages of the epidemic have ceased: and perhaps we cannot better conclude our report, than by expressing an earnest hope, that what has been advanced by Dr. Short in his "History of air and seasons" as well as by Mr. Malthus\* may on this occasion be realized viz. "That a severe and mortal epidemic is generally succeeded by uncommon healthiness."

(Signed) WHITLAW AINSLIE, M.D.,

Superintending Surgeon of the Southern  
Division and President of the Medical Committee.

(Signed) A. L. SMITH,  
2nd Member.

( " ) M. CHRISTY, M.D.,

3rd Member.

COURTALLEN,  
27th August 1811. }

\* See Malthus's Essay on Population Vol. 2nd page 63.

## No. 1.

## Report of Persons who died in the Northern and Southern Divisions of Coimbatore District.

| Talucs.               | Died from January to July 1810, in Fustie 1219. |                 |        | Died from 1st August, 1810 to 30th April 1811. |                 |        | Total. |
|-----------------------|-------------------------------------------------|-----------------|--------|------------------------------------------------|-----------------|--------|--------|
|                       | No. of Males.                                   | No. of Females. | Total. | No. of Males.                                  | No. of Females. | Total. |        |
| Coimbatore            | 931                                             | 823             | 1,754  | 874                                            | 830             | 1,804  | 4,558  |
| Cheer and Cooroondoor | 408                                             | 252             | 700    | 672                                            | 561             | 1,233  | 1,936  |
| Perindrie             | 419                                             | 379             | 789    | 418                                            | 296             | 714    | 1,503  |
| Errad                 | 333                                             | 265             | 597    | 138                                            | 126             | 264    | 861    |
| Andoor                | 434                                             | 354             | 788    | 608                                            | 559             | 1,167  | 1,955  |
| Suttem                | 655                                             | 496             | 1,151  | 775                                            | 630             | 1,405  | 2,567  |
| Coligal               | 549                                             | 412             | 931    | 430                                            | 301             | 731    | 1,712  |
| Caroor                | 465                                             | 363             | 828    | 450                                            | 374             | 823    | 1,691  |
| Darat                 | 307                                             | 197             | 504    | 497                                            | 469             | 966    | 1,461  |
| Pillai                | 896                                             | 697             | 1,593  | 699                                            | 586             | 1,285  | 2,873  |
| Charagherry           | 351                                             | 224             | 575    | 375                                            | 310             | 685    | 1,260  |
| Thal Jum              | 302                                             | 291             | 593    | 353                                            | 253             | 606    | 1,169  |
|                       | 6,069                                           | 4,694           | 10,763 | 6,359                                          | 5,299           | 11,658 | 22,451 |

BHAVANTY.  
2nd July, 1811.

R. E.

(Signed) W. GARROW.

## No. 2.

## Statement of the Population in Fustie 1219 with the Persons who died in the Coimbatore District.

| Talucs.               | Population in Fustie 1219 or 1800, 1810. |         |         | Died from January 1810 to 30th April 1811. |         |        |
|-----------------------|------------------------------------------|---------|---------|--------------------------------------------|---------|--------|
|                       | Male.                                    | Female. | Total.  | Male.                                      | Female. | Total. |
| Coimbatore            | 41,513                                   | 49,539  | 83,552  | 1,905                                      | 1,653   | 3,558  |
| Cheer and Cooroondoor | 25,155                                   | 23,998  | 50,413  | 140                                        | 856     | 1,396  |
| Perindrie             | 26,986                                   | 26,867  | 53,193  | 837                                        | 666     | 1,503  |
| Errad                 | 16,078                                   | 16,243  | 32,325  | 470                                        | 391     | 861    |
| Andoor                | 22,285                                   | 22,021  | 44,306  | 1,042                                      | 913     | 1,955  |
| Suttem                | 24,537                                   | 23,789  | 50,326  | 1,431                                      | 1,136   | 2,567  |
| Coligal               | 23,239                                   | 21,167  | 44,123  | 999                                        | 713     | 1,712  |
| Caroor                | 27,536                                   | 26,479  | 54,015  | 927                                        | 737     | 1,664  |
| Darat                 | 29,950                                   | 23,037  | 52,047  | 894                                        | 632     | 1,526  |
| Pillai                | 20,417                                   | 21,021  | 41,438  | 1,535                                      | 1,283   | 2,818  |
| Charagherry           | 22,182                                   | 22,996  | 44,478  | 725                                        | 554     | 1,279  |
| Thal Jum              | 19,211                                   | 19,515  | 38,726  | 655                                        | 454     | 1,109  |
|                       | 298,989                                  | 297,567 | 596,600 | 12,458                                     | 9,993   | 22,451 |

R. E.

(Signed) W. GARROW.

BHAVANTY.  
30th July, 1811.

## No. 3.

Comparative Statement of Deaths in the Divisions of the Dindigul District for twelve common healthy months and for the last twelve months, that is from 1st April 1810 to the 31st March 1811.

| Names of the Divisions. | Names of the Estates in each Division. | Number of Deaths in healthy year. | Number of Deaths since 1st Apr. 1810 to 31st Mar. 1811. |
|-------------------------|----------------------------------------|-----------------------------------|---------------------------------------------------------|
| Todycumbeo...           | Todycumbeo ...                         | 78                                | 584                                                     |
|                         | Vadasandoor ...                        | 103                               | 439                                                     |
|                         | Coimboor ...                           | 153                               | 659                                                     |
|                         | Tennumpilly ...                        | 81                                | 614                                                     |
|                         | Terriodoo ...                          | 65                                | 595                                                     |
|                         | Adianoot ...                           | 122                               | 1,153                                                   |
|                         | Goodum ...                             | 219                               | 381                                                     |
|                         | Marnoot ...                            | 196                               | 714                                                     |
|                         | Chittynaukenputty ...                  | 143                               | 1,252                                                   |
|                         | Vadamadura ...                         | 159                               | 1,068                                                   |
| Iyempilly ...           | Balakiesnapooram ...                   | 120                               | 1,075                                                   |
|                         | Attoor ...                             | 72                                | 607                                                     |
|                         |                                        | 1,543                             | 9,137                                                   |
|                         | Iyempilly ...                          | 6                                 | 17                                                      |
|                         | Caliampoodeor ...                      | 7                                 | ....                                                    |
|                         | Kaeycadavon ...                        | 10                                | 15                                                      |
|                         | Keeranoor ...                          | 12                                | 14                                                      |
|                         | Yangarray ...                          | 9                                 | 10                                                      |
|                         | Vellumpetty ...                        | 36                                | 47                                                      |
|                         | Coothampoondy ...                      | 11                                | 67                                                      |
| Thenkatty ...           | Perryacuttar ...                       | 28                                | 183                                                     |
|                         | Veeroopatchee ...                      | 33                                | 430                                                     |
|                         | Palaney ...                            | 11                                | 35                                                      |
|                         |                                        | 168                               | 818                                                     |
|                         | Th ...                                 | 141                               | 138                                                     |
|                         | gram ...                               | 63                                | 254                                                     |
|                         | atty ...                               | 62                                | 205                                                     |
|                         | anaputty ...                           | 69                                | 233                                                     |
|                         | Gungoowarputty ...                     | 10                                | 513                                                     |
|                         | Malamungalam ...                       | 34                                | 340                                                     |
| Wootampollam.           |                                        |                                   | 1,733                                                   |
|                         | Wootampollam ...                       |                                   | 695                                                     |
|                         | Chinnamangor ...                       |                                   | 152                                                     |
|                         | Cunibum ...                            |                                   | 548                                                     |
|                         |                                        |                                   | 1,395                                                   |
|                         | Euttalagooslah ...                     | 15                                | 1,130                                                   |
|                         | tal Dindigul Estates.                  | 2,524                             | 14,213                                                  |

Comparative Statement of Deaths in the Zemindaries of the Dindigul District for twelve common healthy months, and for the last twelve months, that is from the 1st April 1810 to the 31st March 1811.

|                          |                    | Number of deaths in a healthy year. | Number of deaths since 1st April 1810 to 31st March 1811. |
|--------------------------|--------------------|-------------------------------------|-----------------------------------------------------------|
| Minor Zemindaries        | Guntamanaickoor.   | 199                                 | 504                                                       |
|                          | Coambay ...        | 46                                  | 211                                                       |
|                          | Ramgherry ...      | 71                                  | 1,601                                                     |
|                          |                    | 316                                 | 2,316                                                     |
| Sequestered Zemindaries. | Nellacottah ...    | 296                                 | 2,875                                                     |
|                          | Sundyhoor ...      | 42                                  | 297                                                       |
|                          | Comarawaddy ...    | 260                                 | 1,809                                                     |
|                          | Total Zemindaries. | 598                                 | 4,931                                                     |

## ABSTRACT.

(Signed) ROBERT PETER,  
King Collector.

(A true Copy  
(Signed) **WHIL** **AINSLEY,**  
Superior Surgeon S.  
and President of the M. and Committee.

of 1800, 1810 and 1817

Statement showing the estimate of population and number of deaths in the leading countries of the world, and the actual number in the industrial system of average 1871 in the United States.

[illegible][illegible]



" Whilst these affairs were adjusting, the southern monsoon setting in on the coast of Malabar broke over the Western range of mountains with the utmost violence and descending, with the cataracts it had formed, into the plain, deluged the whole country to the Eastern sea. The storm, rain, and inundation continued without intermission for two days and two nights. The harvest, just ripe, was swept away and with it the habitations of the cultivators; the rains continued several days after the winds had abated; it required many days labour and sun-shine to drain and dry the ground and more time to repair the devastation which the agriculture of the country had suffered; during which an epidemic sickness broke out and carried off many of the distressed inhabitants by sudden deaths, which the patients' simplicity and the superstition of their character imputed to the visitation of the goddess Letchmie, coming they knew not whence from the north." Every syllable of the above quotation agrees with the present circumstances except the storm.

*3rdly.*—The disease is attributed to the exhalation and stench occasioned by the large bodies of stagnant waters on the sea coast.

This fever or ague is said to proceed from bile. The patient on the second day after being seized with the disorder experiences a kind of fit, and he dies on the third day. If the patient survives the fever for 9 days he is not considered in any danger and in this way the fever lasts either a fortnight, or a month; at first daily and afterwards every two days causing great weakness accompanied with itch and diarrhoea.

Three-fourths of the people who returned from Pylney have died, most of them on their way to Tinnevely, and the rest continue to this day ill of the diarrhoea or rheumatism in their knees.

Q. 3. Has the disease been more fatal amongst the huts of the poor? or equally prevalent in the more comfortable houses of the people of caste?

A. It is much more fatal among the huts of the poor, than with those who reside in comfortable houses. The mortality has been great among Toddy people who live in Palmyra topes, and also among the weavers. The houses of both these descriptions of people being of the worst kind. The former live in huts of

Palmyra leaves, many of which were destroyed by the storm in December, and they left uncovered.

Q. 7. Has there been any change in the grain or food of the country, by reason of diseased growth from the unusual fall of rain or any other cause that can be traced?

(A true copy)

(Signed) W. AINSLEY, M.D.,  
President of the Committee.

No. 7

To

THE SUPERINTENDING SURGEON

*Southern Division.*

SIR,—I have the honor of transmitting my Returns for last month, by which you will perceive that the number of our sick is greatly increased; most of those who escaped the fever at Dindigul have been taken ill since their return; and I am sorry to add that the sick whom I brought along with me have hitherto derived but little permanent benefit from their removal to a healthier climate. During the march, and for a considerable time after our arrival here, there was an evident amendment in the state of the sick; and an air of cheerfulness was diffused throughout the Hospital in which I most cordially participated and was led to indulge hopes that unfortunately have not been realized. For about two days before the change of the moon, as took place last month at Dindigul, relapses were frequent among the convalescents and those affected with the disease at the time suffered an exacerbation of every symptom. Though I had used the precaution of opening the bowels and throwing in a large quantity of Bark before this period, yet some cases proceeded rapidly and resistibly to a fatal termination. It is unfortunate that we cannot regulate the diet of Natives nor do their habits permit very rigid confinement. I have been able to trace the origin of some dangerous and even fatal cases of flux to their eating cucumbers and other

vegetables, in which notwithstanding every caution they seem to have a strong propensity to indulge.

I have employed the mineral acids as you directed with good effect; and have found camphor a valuable addition to the calomel; James's powder combined with calomel is resorted to when the object is to reduce the disease to a regular form by procuring a distinct remission.

I have tried the sulphate of zinc in some intermittents; but with no great success. In a few cases, it appeared to be useful; in others, though it checked the regular paroxysm, it was evidently hurtful by causing much general uneasiness, accompanied with headache, nausea and slight but constant heat of skin; such patients complained also of a most disagreeable sensation about the upper part of the oesophagus, arising, as it were, from an inverted action of that organ. This medicine might perhaps be employed with advantage in changing the type of an obstinate quartan.

In addition to the above remarks I shall only add that I endeavour occasionally to interrupt the morbid action by the exhibition of an emetic or a full dose of Laudanum before the accession of the cold fit: and have tried, for the same purpose, what I have heard recommended, equal parts of the tinctures of rhubarb and senna which seem to have more effect than can be easily accounted for. Upon the whole, I cannot look back with much satisfaction to the result of my most anxious endeavours, and am sorry to say that my confidence in the effects of medicine, in certain circumstances of disease, is rather lessened than increased by the little experience which I have had.

I have the honor to be,

Sir,

Your obedient and humble servant,

(Signed) J. HASTIC,

Assistant Surgeon,

2nd Batt 25th Regt.

TRICHINOPOLY, 1st July 1811.

No. 8.

Q. 1. When and where did the disease first attract notice?

A. Generally from the Southern Division in the Chockragerry, Arvacourchy, Pollauchy and Darapooram Taluqs.

Q. 2. Has its progress been in the direction of any prevalent wind?

A. Its direction has been north—the prevalent wind is the western.

Q. 3. And if so was the country wet at the commencement, or did the winds blow from countries where heavy or partial rains had fallen?

A. The rains fell in the country itself in unusual quantities in last February at an untimely season. The natives consider that the waters are in a great degree poisoned by the addition of the numerous

deleterious plants &c. which are washed into their streams or springs; the plants having at the time the most active effects, whereas according to the regular course of the season they are from their tender state less noxious.

Q. 4. Has there been any general or unusual disease among cattle or other animals since this disease became alarming?

A. None.

Q. 5. Are the members of a family generally attacked at once or only after one of them has been taken ill?

A. Symptoms have mostly attacked one person first.

Q. 6. Are there marks of putrescency in the disease?

A. None apparently.

Q. 7. What is its general period of termination when fatal?

A. Nothing certain has been ascertained upon the point; 5, 6 and 10 days or a lingering intermittent of weeks have

been common.

Q. 8. Are the bowels affected, and whether at the commencement or termination of the disease; and is the diarrhoea or flux severe, and whether attended with discharges of blood?

A. A diarrhoea generally supervenes when the disease is fatal.

Q. 9. Has the disease been general over the provinces to the southward or in particular places, and can its commencement be traced to returning pilgrims or other intercourse of inhabitants?

A. It may be said to have attacked Coimbatore generally though not at the same time; it seems to have spread more by the atmosphere than by intercourse with pilgrims &c.

Q. 10. Has the disease been most partial among the huts of the poor, or equally prevalent in the more comfortable houses of the caste people?

A. All descriptions have felt its effects.

Q. 11. Are the European inhabitants attacked with the same disease?

A. Intermittents have appeared among the European residents.

Q. 12. Has there been any change in the grain or food of the country, by reason of diseased growth from the unusual fall of rain, or any other cause of this nature that can be traced.

A. None.

BHAVANY, 9th July 1811.

(Signed) W. GARROW.

## MEDICAL EDUCATION OF WOMEN.

2235

WE have seen it laid down as an axiom that the noblest principle of life is change. All things change. The steadfast mountain crumbles down and its particles of soil are carried away by the hillside torrent to refresh and fertilize the plains below. Man changes from the child to the adult; from manhood to old age; from the mortal to the immortal. Kingdoms, dynasties and forms of social life change and alter their condition. To remain without change is impossible; changes constantly occur even under our own observation. Old things are passing away—nay in many instances they have passed away. We do not now find the home-industries described to us by our elder relatives. The progress of arts and manufactures has rendered unnecessary the home arts of spinning, baking and brewing. All these things are better done on the principle of division of labour, by organized agency specially trained for the purpose, each in its appropriate manufactory, in place of the individual efforts of the women of the family. No one would now don a homespun coat, or wear a knitted sock, when he can obtain a superior article at a less cost. Even were this not the truth, it is a fact that our girls are no longer educated with a view to the same after-life as was lived by their grandmothers. Some sixty or eighty years ago a woman was amply educated for an ordinary position in life, could she read her prayer-book and write a letter. No doubt, in many ways, woman was then, as she has ever been, a "help meet" for man; but how many a man must have regretted that the very one, whose

affection and respect would best fit her in every way to be his *alter ego*, was utterly unacquainted with even the elementary principles of the art, profession or trade by which he made the daily bread of the household! Man has an intellectual, as well as a physical and a moral nature. He needs sympathy with each part of his character and vocation to make his life substantially happy; and it certainly cannot conduce to his happiness to find his partner utterly unable to appreciate his labours, to exult in his successes or to sympathize, with true womanly tenderness, in his failings. Hence arose a desire among men that their daughters should be better educated. The old ideas passed away, and in a short space of time the girl's curriculum was well nigh as arduous as the boy's course of study, while it was a good deal more varied. Our daughters were taught to know and appreciate their own language, to read the history of their own and other lands, to converse in French and other modern languages and to cultivate the accomplishments which serve as the recreation of life. Recently, during the past ten years or so, lectures have been given at all first-class schools on the elements of geology, botany, chemistry and other physical sciences. The seed thus sown fared like other seed; in some "it yielded an hundredfold", springing up with such vigour as to beautify and adorn all the girl's future life. Henceforth, she had ample resources within herself: no place could be dull; no time hang heavy on her hands: the stones, the flowers, the silent stars, all suggested thoughts which were companions in any solitude or leisure hour. The thirst for knowledge once awakened is insatiable; and where the seed takes root thus kindly, the woman is a better, because a more intelligent, member of society, a fitter wife to her husband, a more capable mother and guide to her children. In other cases

of course, we shall find that the good effects of the impression once received remain all but passive in the mind, and yet the woman is fitted to sympathize with her husband, even although she may not have the power actually to aid him. Thus something has been gained. The power, though passive, is still real; and it is clearly an improvement on bygone days.

The progress of manufactures and the changes in social economy have buried with the past, the spinning, knitting and sewing that filled up the leisure hours of our grandmothers and that made their lives happy and useful in their day and generation. Our girls are no longer fitted for this work; nor is there any scope for such ability did the knowledge exist. The result is in some cases very sad. Our daughters are in too many instances aimless, idle and unhappy. They have no proper or beneficial occupations; and the time which is so valuable, the young fresh hours of life, when every faculty is well strung, the imagination most vivid and the physical constitution at its best, are frittered away in an objectless existence, or in the pursuit of so-called pleasure. This is not the case with our sons. Their school career, their college course and the business of actual life demand their best energies. They become useful, earnest, and self-reliant; while the very girls who are to be the companions, the wives, and the mothers of the future, have no other device to wile away their precious time, but the perusal of empty novels, or the absurd imitation of birds, beasts, and flowers, called "Fancy Work;" or perhaps they are driven to effervescent fits of pseudo-piety, the only alternatives to which are reckless flirtation and the slow poisoning process of uncontrollable ennui. There must be something essentially wrong in such a state of things. Why should all other labour have a definite end, all other seed-time an abundant harvest, and only the

long years and hard earned money spent on a girl's education have no fruition? These considerations, even were there no others, should lead the present generation to seek some useful and honourable career for its daughters as well as for its sons. In some cases, perhaps in many, there is an absolute necessity for the girls of a family to aid in the common effort to earn the household bread. The daughters of our English mechanics, labourers and small farmers, know well that they must turn out into the world and do their best to maintain themselves in decency and comfort. They have no false shame in using to the best of their ability and knowledge the heads and hands that nature has given them. They are, as a general rule, diligent in their calling and faithful in the exercise of the little committed to them by the Great Master. It is when we come to a step higher in the social scale that we meet with sad instances of the want of an acknowledged career for the girls and women of the day. Perhaps one girl, braver or better endowed by nature than the rest, tries a situation as governess, but notwithstanding all its drawback, the profession of governess is much overstocked in England; and there is no room for it in India. To take the lowest view of it, in the language of the old Jew, it does not pay. For many years however no other opening could be thought of at home; and thousands of ladies, well-born, well-bred and well-educated, were sacrificed in this profitless manner. We are aware that these remarks are more applicable to the circumstances of England than to those of India, but the principles of education and its good results are the same there as here. We are most thankful to find that there are now several openings at home to a useful and happy career for women, whose birth and education would render unbearable and irksome the

duties of domestic life, shop-girls or needlewomen. But the active and tenacious to the back-bone, hesitated long ere she followed the example set by foreign nations; but the real misery caused by want of means and want of employment has at last told its lesson; and we now find English women busy in printing-presses and book-binding rooms, directing the wondrous telegraph or copying hard worded folios in lawyers' offices. Many doors of honest and hopeful toil are thrown open to them; and the women of England, to their credit and advantage, have proved themselves both willing and able to avail themselves of these several sources of industry and honest bread-winning.

There is another sphere of usefulness to which we would now specially call attention—one which, in its appeals to the best attributes of a woman's nature, far exceeds all others—one which has claimed the attention of women since the earliest historic ages, and of which one branch at least was under the direct protection and patronage of the ancient Queen of Heaven, Juno Lucina! We refer to the most humane of all, the healing of the sick, the soothing of the anguished, the comforting of the distressed. The medical profession is one of the noblest that man or woman can be called on to exercise. It appeals to our three-fold nature, and every one who, even in the humblest of its grades, exercises this calling aright, should be better, more learned and holier, from the daily ministrations to suffering humanity. In the preliminary scientific examinations the mind of the embryo physician is strengthened, cultivated and trained to a degree far beyond the mere book-knowledge he may acquire. In the subsequent course of lectures delivered by the heads of his profession, he is directed how to apply his knowledge, and by clinical ex-

perience, by patient w  
tion by the bedside of  
prosecution of *post-mo*  
insight into the construction of man and the work-  
ings of nature which truly fit him to be a high-  
priest of the healing art. "The eye only sees what  
it brings the power of seeing." From sharing in the  
labours, trials and honours of this profession, women  
have long been debarred—debarred no doubt as much  
by their own ignorance and want of system as by the  
objections raised against them by the members of  
the medical profession. All this is easily under-  
stood if we remember the class of women who pro-  
fessed to have any medical knowledge. They were  
for the most part aged women, to whom age had  
taught neither sobriety, honesty nor the power of  
governing their tongue. They were utterly unedu-  
cated and prejudiced to a fearful degree, women  
who eschewed cold water and fresh air and who, in  
the hour of emergency, were altogether unfitted to  
aid the medical man in the simplest of operations.  
No wonder that the highly educated and refined  
doctor shrunk from being associated with those  
wretched specimens of womanhood, devoid of know-  
ledge, ordinary sense and common good-feeling.  
These women seldom set up, as the village barber  
did, to be "bone-setters," or "bleeders," or domestic  
surgeons; they confined themselves to midwifery  
and the nursing of the sick. How they were ever  
tolerated by medical men as their co-adjutors is a  
matter of marvel; but we must suppose that they  
were put up with simply because no fitter helpers  
were forthcoming. The case is altered, or rather  
is altering now: women of all ranks show them-  
selves eager for medical tuition. In the uneducated  
woman whose highest ambition is to be a good nurse,  
to the highly educated and well-to-do women who  
swell the ranks of the Sisters of Mercy, all are sincerely de-

observa-  
diligent

ins that

altered, or rather  
ranks show them-  
the uneducated  
a good nurse,  
women who  
sincerely de-

sirous to render help in as intelligent and as perfect a  
manner as possible.

There have been many objections raised against  
the admission of women to a medical career—some  
of them no doubt of great weight and deserving of  
serious consideration: others again merely frivolous,  
and sprung from mistaken notions of propriety or  
from desire to let things be as they are. Some of the  
faculty are opposed to the medical training of women,  
on the ground that they must share the class-rooms  
of the male students and that it by no means be-  
seems a woman's modesty and delicacy of feeling to  
acquire from a male teacher, and amid male fellow-  
students, any knowledge of anatomy, midwifery and  
other kindred subjects. This is an objection that  
comes home to every woman desiring tuition, to  
every father who would like his daughter trained to  
the most noble of professions. We hold, however,  
that this objection is founded upon a mistaken notion  
as to what is, and what is not, true delicacy of  
feeling. We would put our opinion forward with  
due respect for the opinions of others, but to  
our mind, the whole body is a monument to the  
greatness and wisdom of Him who made it; and  
no right-minded man or woman could make the  
highest manifestation of God's creative might the  
subject of unseemly jest, unholy thought or unde-  
sirable allusion. We think that the evil—if evil  
there be—exists only in the imagination of the mor-  
bid, not in the subject which demands the best  
efforts of the mind. Further, we do not see how,  
in a properly conducted class-room, under the super-  
vision of a teacher who himself felt the solemnity  
and responsibility of his profession, the pupils could  
ever behave in any but a becoming manner. Another  
objection frequently urged is that women are deficient  
in nerve and strength; as to the latter, we believe that  
skill is more in request than strength in a doctor; and

for nerve or quiet, silent steadfastness of purpose, we think that women are, at least, as well endowed as men, if not more so. No doubt we shall find individual women, as well as individual men, who feel faint at the sight of a streaming wound or a repulsive sore. Perhaps more women than men might plead guilty to this charge; but no one chooses a profession without some regard for his, or her, personal feelings; and we may feel assured that a woman who willingly undergoes all the study and all the practical work demanded in hospitals may be trusted to have nerve enough for even an alarming crisis in after practice. Then as to moral courage, as to whether a woman can have the heart to resolve on some painful treatment, and to carry it out firmly, steadily and tenderly withal, not ceasing for the trying cries of her patient or the possible outcries of those around her, we believe that there are many such gentle, yet firm-minded, women who will not shrink from duty merely on account of its disagreeableness. Again, few medical men, even those who bear the highest reputation, ever undertake an operation of extreme difficulty without the advice and co-operation of a brother professional; and we cannot suppose that any medical man would refuse his counsel and assistance because the individual seeking it was a woman instead of a man. Another objection frequently urged is that the training and profession of a doctor are utterly incompatible with the duties and responsibilities of a wife and mother. We are quite willing to admit the force of this objection in many cases; nor can we conceive a more undesirable and pitiable state of things than that in the home where husband and children are neglected, while the wife and mother, forsaking her duties and truest pleasure, is engrossed in other pursuits, studies and cares. We content, however, that this is no valid objection against the ad-

mission of such women as desire it to a medical career. We know that all women do not marry, some perhaps never have the chance, and some by a peculiar idiosyncrasy, have no inclination. Now there can be no possible objection to these women entering the medical profession and throwing into this channel all the energy and enthusiasm that will otherwise be frittered away in profitless pursuits, that can give no solid pleasure but which tend more than any other circumstances to make them those peculiar, crabbed and disappointed specimens of humanity called "old maids." Supposing, however, that a female medical student or a lady-doctor marries. Will she be a worse wife or a worse mother? Have her studies made her more or less competent for the general duties of life? We assume of course that she gives up all special prosecution of the profession as a matter of gain or constant occupation. We believe that she will make a better wife and be a better mother. The knowledge of the healing art will still remain, and husband, children and friends may be the gainers by her kind and gentle ministrations. The arguments in favour of giving women a medical education are many. A sick man longs for the gentle touch and friendly sympathy that none can bestow so well as a woman. Woman indeed is man's natural nurse; she is the first that soothes his infant ailments; she is the one who composes his limbs and closes his eyes for the last long sleep. A woman's hand is peculiarly adapted for some operations—those especially where a small soft hand is preferable, and less liable to entail injury, than one of larger size and rougher mould. In all circumstances knowledge is power; and in some cases, the mere tying of a handkerchief and tightening the impromptu ligature with a twig may suffice to stay inordinate hemorrhage from a divided artery, when the patient must assuredly die were assistance

delayed many minutes. We do not mean that all women who study medicine should practise for gain: in the higher ranks, it were most undesirable that a woman should do so; but no one is the worse for knowing what should be done in cases of emergency and knowing how to do it. No one will be more thankful than the doctor to have all things made ready to his hand. The last argument we shall adduce to-day is, that taught or untaught women will ever be employed especially by the poorer classes, in one most important branch—midwifery. It is only necessary to look back on the past annals of midwifery in England, and the constant mal-practices by native midwives in this country, to make us all agree, that so far as this branch at least is concerned, women must be scientifically and thoroughly taught. A series of articles published in *The Lancet* for April, May and June last, will show us something of the horrible barbarities common in England, so long as midwifery was practised by the so-called midwives. Here, in India, there is scarcely a medical man who could not confirm a well-known practitioner's statement to us—"they bring here women whom they have actually killed by their ignorance and cruelty and then expect us to deliver them in safety, though the womb is ruptured or other fatal injuries inflicted!" The subject is full of interest; but we have written as much as space will permit. We shall therefore stop for the present, with the hope of continuing the subject in a future issue.

#### HONORARY REWARD FOR MEDICAL SERV.

It is right that the attention of the Medical Profession in India should, every now and again, be

called to the relations existing between the Government of India and its medical servants, in regard to the distribution of Honorary Rewards.

The time has long since gone by, when the officers of the Medical Department were refused the decoration of the Order of the Bath, and the war services of medical officers, both of the British and Indian Medical departments, have of late years been fairly enough acknowledged in this respect. But in regard to the more modern decoration of the Star of India, which is in no respect a military order, but one instituted for the special purpose of honoring good and efficient service or marked distinction in every department of the State, it seems to us that the services of officers of the Medical Department have hitherto been strangely lost sight of or neglected, in the distribution of the Companionship of the Order. So far as we know the only two medical officers of the Indian service who have hitherto been selected as Companion of the Star of India, are Dr. W. Mackenzie, late of the Madras Medical Department, and Dr. Joseph Fayrer of Bengal. Dr. Mackenzie's war services were varied and numerous, and had been already recognised by a Companionship of the Bath when the additional honor was conferred upon him. The bestowal of the honor on Dr. Fayrer would appear to have been due quite as much to his distinguished war services in Burmah and Lucknow, as to his established repute as a scientific and practical surgeon, and his acknowledged position as leading practitioner in the metropolis of India.

In neither of these instances does it appear to us that the decoration of the Star of India has been conferred for other than purely military services, and we have no objection in declaring that the practical limitation of this honorary reward to those of the Medical Department who alone have had the opportunity of distinguishing themselves in

war service, is unjust and contrary to the tenor and spirit of the statutes of the Order, as established by Her Majesty Queen Victoria.

To show how unfairly the new Order is shared in by medical officers, we may be permitted to allude to the case of a gentleman of the Bengal Medical Department, of whom we know nothing more than the testimony already recorded of his public services by the Government of India. In a recent "Resolution" of the Government of India, it is declared that "in the districts of Kumaon and Gurhwal, until about twenty years ago, the ravages of small-pox were frightful! "Not a year passed in which the Government did not hear of the populations of large villages being more than decimated." A thoroughly efficient system "of vaccination was, however, commenced "under Dr. F. Pearson, now Superintendent General "of Vaccination, North-west Provinces. The result "of the admirable measures adopted by that officer, "and pursued with the greatest judgment and perseverance through a course of years, has been that "small-pox has almost ceased to exist in Gurhwal "and Kumaon. The prejudices against vaccination "have, for the most part, vanished and the people "are generally not only willing but eager to have "recourse to it."

Such is the unsolicited testimony of the Government of India to the services of Dr. Pearson—to services pursued under every discouragement through "a course of years" and although the results of his labours have been in the hilly districts of the Sub-Himalaya free from epidemic small-pox and to preserve to the State, as tax-payers and producers, thousands of valuable lives yearly, this eminently useful public servant has not up to the present time been deemed worthy of an honorary distinction like that of the Government of India. If Dr. Pearson had expended a moderate amount of patience

and perseverance in the perfection of a devilish instrument for the destruction of human life, and had succeeded in making his invention applicable to warfare, we doubt not but that he would have been made a G. C. B., and probably a Lord of "Kumaon or Gurhwal," in recognition of his labours.

Or had he confined his energies to smart newspaper writing, and to lampooning his official superiors in "green letter pamphlets," it might possibly have been deemed a matter of public policy to dub him a C. S. I., with the view of keeping him in good humour; but being merely a successful worker in the great field of preventive medicine—a great preserver, and not a waster of human life—the great Government of India by its public acts tells him that he is unworthy of an honor that was expressly intended by the Queen for such as he, but which strangely enough has often come to be conferred on men, who by thought, word, or deed, have never conferred the smallest benefit on their immediate dependants, or the world at large.

Some of our daily contemporaries have been lately discussing why it is, that with so many advantages in the way of pay, promotion and pension, the Indian Medical Service should be so little attractive to the students of the schools at home. We think the answer is to be found in some degree in this unfair withholding of honorary rewards from medical men, which in other departments of the State are freely enough offered for special and distinctive service. Mere pay, promotion or position, in themselves, are not enough to attract ardent spirits.

A medical man, under any circumstances, can only distinguish himself from his fellows, either by the zeal and knowledge he brings to those hygienic measures, which act favorably on the health of the masses of the population, or by his skill in the detection of, and successful treatment of disease. For long

and distinguished service in either of these two great divisions of the healing art, it is surely but reasonable that the medical officer, should be in no worse a position for the receipt of honorary awards, than the mere soldier, or civilian, or native chieftain, who do their duty creditably according to their respective lights.

The case of Dr. Pearson, we have specially alluded to, and we trust he will pardon us the liberty of the reference, under the circumstance of the public acknowledgment of his services by the Government of India; but there are doubtless other Medical Officers in India, who by their past labours and contributions to professional lore, are equally deserving of official recognition, and in regard to these officers we think the Head of the Medical department in each Presidency should be called upon to submit to Government occasionally, the names of those of his subordinates, whom he considers deserving of honorary distinctions. No doubt it is essential that honors of this kind, to be valued, should not be too freely given away, but if the names of medical officers are never brought before the Government for awards of this nature, there must be something wrong in the system or method of distribution, and the sooner the wrong is remedied, the more satisfactory will it be, both for the Government, whose interests are involved in honoring unusual talent or ability, and the Medical Department generally.

### CHOLERA PROSPECTS.

The southward movement of cholera which all through May, June, July, and August has been steady and continuous appears to have received a temporary check. The returns show

that cholera has already occupied a good part of the Bombay Presidency, Central India, the Deccan and the Northern Districts of our own Presidency, so far south as the Godavery river. In the Kistna District up to date the disease has been limited to a few villages in the hilly taluqs. In the town of Kurnool two fatal cases had occurred during September, both in strangers coming from infected tracts of the Nizam's country. In the old fort of Raichore in the Doab between the Kristna and Tomboodra rivers, the disease has been established, but Railway communication with this place has not apparently had the effect of hastening the southward movement of the epidemic. A great feast is at the present moment in progress at Tripaty, to be followed by another at Conjeeveram, and it is by no means improbable that these festivals may be attended by cholera outbreaks considering the number of pilgrims who flock to them from the north. On the whole however we are inclined to the view that the prospects of an immediate outbreak in Southern India are not very clear. That the epidemic will by and bye be renewed in the Deccan and our North Districts is pretty certain, and when this renewal takes place we must be prepared for an extension of the epidemic in a southward direction.

### SANITARY REPORTS.

A local contemporary in a recent issue has characteristically insinuated that we are not impartial in our criticisms of the Bombay and Madras Sanitary Reports; that we systematically praise the latter and condemn the former. We do not on their respective merits, but according to their origin. We notice the impertinence, more because it appears to be intended to convey the impression that the supposed pheno-

menon is due to the connexion of the Sanitary Commissioner for Madras with this Journal. We simply state in reply that that connexion has long since ceased. As to our competence to criticise impartially professional papers we believe we are at least equal to any of our contemporary's contributors.

We have no hesitation in adding that Mr. Cornish's last Report which the *Madras Times* has shown itself incapable of appreciating and which we hope to notice at greater length in our next issue, is one of the most able and valuable Reports of its kind which have been published since Sanitary Commissioners were appointed.

## MEDICAL MISCELLANY.

*The Blood-crystals and their physiological importance.*

By S. WATERMAN, M. D., New York.

The blood-corpuscle is the highest developed organized cell known. Its atomic weight and complex composition are the marvel of the analytical chemist. The discovery that these blood-corpuscles contain a crystallizable substance is of recent date. The first observations were made by Reichert, Kolliker, and Funke, and still later by Lehman, who gave to these crystals the name of "Blutcrystalle" (blood-crystals). This physiologist was, however, but partially aware of the great physical importance and function of this crystallizable albuminoid, for in his *Handbuch der physiologischen Chemie*, he says, "that owing to the entire absence of knowledge respecting the chemical constitution of this substance, we are unable to form any opinion regarding its genesis."

Even as recently as 1858 Rudolph Virchow did not assign to these crystals any special function. He noticed the fact that they behaved in certain respects like organic substances, inasmuch as they became larger through the action of certain agencies, and smaller through that of others, without any change of form. He was also aware that the form of crystallization was very different in different classes of animals, and he adds, "that hitherto it has not been possible to discover any satisfactory reason for their existence, or to obtain any insight into the nature of their substance. And yet he knew the fact that these crystals were affected by oxygen and carbonic acid precisely as the blood is; that they become bright red with oxygen, and dark or bluish red with carbonic acid. In common with the former erroneous views of writers upon this subject, the coloring pigment of the blood was described by him as hæmatine, yet Lehman had already demonstrated that the insoluble substance so rich in iron is not found as such in the blood, but that it is in reality a product of decomposition of the true pigment of the blood, now known as hæmato-crystalline, hæmoglobin, or erythrin.

The great practical inquiry which attaches itself to the solution of the inquiry is the nature and function of this substance and others. My apology for making it the subject of some general remarks is that it is a subject of some general interest.

The spectroscopist may now be considered as having

fairly entered into the service of medicine, has thrown a flood of light upon this and kindred inquiries, and has revolutionized many theories formerly entertained regarding the mysterious processes within our economy; and the results already obtained cannot fail to exert a definite influence upon our conception and treatment of disease.

Recent researches, aided by spectroscopic observations, have demonstrated that the blood-crystals, the hæmato-crystalline, are actively at work in the economy to sustain the processes of respiration, oxidation, and oxygenation; that through their instrumentality alone the oxygen of the air is attracted and bound to the blood-corpuscles, which by the heart's action is carried into the intricate recesses of the capillaries; there they give up their oxygen to the oxidizable tissues, with which they form energetic combinations; that in return for its oxygen thus given up, the hæmato-crystalline as energetically combines with carbonic acid, the product of combustion, which acid it carries back to the heart and lungs for final elimination. It has been fully demonstrated by experiments, that so long as the hæmato-crystalline remains the same in quality as well as quantity, the supply of the oxygen to the economy is subject to relatively small oscillations; and with the increase and decrease of this substance, or with any change of its integrity, rises or falls the degree of vitality in an individual's life. That it is beyond any question the hæmato-crystalline, and not any other substance of the blood, which enters into and sustains the vital exchanges between oxygen and carbonic acid, has been fully proved by spectroscopic observation. Hæmato-crystalline in solution is able to absorb oxygen as well as carbonic acid with the greatest facility. It can exist like the blood itself in a double state of oxidation, corresponding to arterial and venous. It can be oxidized and deoxidized at pleasure; it presents the same absorption bands as the blood does, and in the exact part of the spectrum it enters into precisely the same combinations with other irrespirable gases; and all and every optic appearance which blood presents when acted upon by chemical agents, are also faithfully reproduced when the same agents act upon a solution of hæmato-crystalline.

As to the absolute quantity of hæmato-crystalline, experiments made show that the total volume of the blood in man 9 to 12 per cent. is composed; in the moist corpuscles, freed from serum, it rises to 10 per cent.

In reference to the rapidity with which oxygen is absorbed by this hæmato-crystalline, we refer to Pflueger's highly instructive experiments upon dogs. Hæmato-crystalline was extracted from the blood of animals to inhale pure nitrogen gas. In 30 seconds the point of dyspnoea was reached. At this point some hæmato-crystalline was extracted under great precaution, and tested for oxygen. It was found that its quantity of oxygen had been reduced to being 1 to 2

per cent., whilst the blood abstracted from the same animal, immediately before it inhaled the nitrogen, contained 18.6 per cent. of oxygen. As soon as these animals were permitted to inhale again pure air, the dyspnoea disappeared, and they seemed to be as well as ever.

Preyer made the observation that one gramme of hæmato-crystalline had the capacity to bind 1.27 cubic centimetre of oxygen; and Hoppe Seyler determined that the blood of dogs contains, on an average, 13.79 per cent. of oxygen. Pflueger gives the amount of oxygen contained in the human arterial blood as 16.9 per cent. Blood-serum contains of this gas only 0.1—0.2 per cent. of oxygen. The more compact the blood, the greater the amount of hæmato-crystalline, and so the reverse. In many animals, especially in those that hibernate, the quantity of hæmato-crystalline diminishes gradually during the winter's sleep; and we find, on examination, that their blood has lost much of its density.

According to the analysis of C. Schmidt and Hoppe Seyler the hæmato-crystalline from dogs has the following composition:—

C 53.64, H 7.11, N 16.19, S 0.66, Fe 0.43, O 21.02, P<sub>2</sub>O<sub>5</sub> 0.91, alkalis 0.04—100.00. These proportions differ in various animals and man, but not to a very great extent.

Hæmato-crystalline crystallizes in beautiful rhombohedral plates, at times also in prisms of a beautiful red color. They cannot be obtained free from the coloring pigment, owing to the extraordinary tenacity with which it clings to the hæmato-crystalline.

One of the most interesting properties of hæmato-crystalline is its capacity to combine with destructive energy with many irrespirable gases, whereby its own integrity is sacrificed, and its life-sustaining power is lost for ever.

These combinations are, unlike those into which it enters normally with oxygen and carbonic acid, transitory and easily effected; on the contrary, they are irrevocably permanent, and any further absorption of oxygen, when thus combined, becomes absolutely impossible. This fact is evidenced by various crystalline forms of peculiar consistency and durability. With carbonic oxide it forms carbonic oxide hæmato-crystalline; with prussic acid, cyanide of hæmato-crystalline, and so forth.

Hæmato-crystalline is the most indestructible substance known.

No matter how long it has been mixed with fluids undergoing putrefaction, it retains its characteristic features, especially its optic relations, as evidenced by its spectrum test. I look upon this stability and indestructibility as the most important, nay, principal factor of animal life, and any pathological condition affecting this stability must necessarily affect the stability of life itself.

All these interesting and incontestable facts have been ascertained by means of spectroscopy. By its analytical power

we have become acquainted with the changes these blood-crystals undergo when acted upon by various chemical agencies, and thus obtained an insight into the processes of life which a decennium ago we had no hope of ever obtaining.

Some interesting points, however, still await explanation. Under the spectroscope the hæmato-crystalline of animals and birds and fishes produces like optic relations, yet we know they differ to some extent in their composition and their forms of crystallization. The spectroscope can throw no further light upon this inquiry, and we may suppose we have arrived at the limit of an investigation of a substance so subtle in its composition as to defy further recognition. "Thus the blood of man and of many carnivorous animals crystallizes in prismatic and rhombic columns and plates. The blood of the guinea-pig, of the rat, and the mouse in beautiful tetracheters; the blood of the squirrel presents hexagonal plates; in fishes we have fine prismatic needles, and so on. They also differ in different animals in solubility and sinking capacity.—*Medical Record*.

*George Thomas—A curious case.*

Dr. S. B. Merkel, of Philadelphia, introduced to the section\* George Thomas, a colored man who could play such queer tricks with his heart and his belly that Profs. Pancoast and Gross had found this case worthy of examination, and the latter had hinted that he was probably in league with the Devil. He was born in Brazil and raised in London; had spent some time in Germany and at Paris, where, as at London, he had attracted scientific attention; and he had now taken up his abode at Frederick City, Md. He claimed that he could stop his heart, "throw" it into different parts of the abdomen, and "roll" the latter about the navel. The last peculiarity had been discovered by his mother when he was six months old. He got his living by exhibiting himself, and seemed anxious for a while about his pay; but, satisfied at length that the hat would not be empty, he lifted the curtain and opened the show.

First he made the abdominal wall undulate by a peristaltoid movement of the recti from above downward, there being about one and a half, or possibly two and a half, waves visible at once. The motion became very rapid, and was kept up for a minute or more. (He said he could do it all day.) Then he reversed the action, sending the undulation below upward; and thus he alternated several times. "He threw his heart" into the belly, and a swelling like a tumor appeared above the crest of the right or the left. Finally he "stopped his heart," until several observers could neither hear nor feel it.

\* American Medical Association.

and Anatomy.

The Special Committee on the case reported as follows:—

Dr. Moore, of Rochester,—We have made a very careful examination of this case, but have had no time to put our report in writing.

First, we directed our attention to the heart. We find the heart itself grossly large, and the main arteries also greatly distended. The impulse of the abdominal aorta is very readily and very strongly felt when the subject is lying upon the table. The arteries of the wrist are abnormally large.

When the boy undertakes to suspend the action of the heart, we find that action growing less and less and less, until it becomes imperceptible both to the ear and to the finger, showing certainly a very great diminution in its force.

With reference to the alleged transposition of the heart, from point to point we observe these facts: When the attempt is made to "throw the heart," as he says, upon the left side of the abdomen, the right side is seen to become very much indented, and the left side to become a little extended. But we also note that there is a suspension of respiration, and a state of powerful tension of the whole of the muscular system. Synchronous with all this we find a very decided increase of the heart-sound over the tumor, while the ear of a second observer is kept upon the thorax, and the sound is still heard over the normal position of the heart. We observe similar phenomena, simply reversed, when he attempts to throw the heart upon the right side.

These are the facts. Our inferences from them are, perhaps of no more value than would be those of any one else.

It is possible that, by the drawing downward of the diaphragm, the pericardium may be so elongated and narrowed as actually to compress the heart from the sides. It may also be supposed that, besides this mechanical action, there is an element of will acting in some peculiar way upon the heart through the nervous system.

With regard to the act of "throwing the heart" into the abdomen, as is claimed, that claim is by no means admitted. We have stated to you the fact, however, that there is an increase of the sound over the tumor; and this seems to us to be developed as a result of the extraordinary muscular tension. It is easy to understand, I think, that the compression of the abdomen, under this strain of its muscles, would have the effect of bringing the abdominal walls, the spleen, and the heart into very close relation with each other, and of increasing greatly the facility of transmitting sound. We are disposed to think this the true explanation, since the heart is still to be heard at its normal position at the same time that its sounds are so distinct below.

As to the peculiar action of "rolling the belly," it seems to me the result of prolonged training, commenced in early life. This has enormously developed the recti muscles, so that when relaxed they feel like a great mass of dough under the fingers, and has given them a power of vermicular motion precisely like that of a snake or an eel. Indeed, I am not sure but this case may throw a little light upon some speculations of the transcendental anatomists. One of these, as you know, is that the linea transversa of the recti are the rudimentary homologues in man of the abdominal ribs of some lower animals—all we have left of them. Now these give an opportunity for each of the short muscles between them to act by itself; and by bringing them successively into action, the vermicular motion is produced.

One word more. There is no motion of the chest in breathing, or scarcely any. You tell the boy to take a long inspiration, and he immediately expands the abdomen into a great tumor, while the thorax remains perfectly quiet. This shows the wonderful action of his diaphragm—even more wonderful than the power of, and control over, the other muscles of the abdomen.

Dr. HORTON asked whether the sound in the abdomen might not be due to the pulsations of the abdominal aorta.

Dr. MOORE.—We thought of that, and it is possibly so.

### Hydrate of Chloral in Traumatic Tetanus.

Dr. JOSEPH R. BECK, in the *St. Louis Medical Journal*, gives a summary of all the cases he has read of in which hydrate of chloral was used in traumatic tetanus. The following table shows the results:—

| No.            | REPORTED BY                              | MODE OF TREATMENT.                           | Whole No. | Died. | Recovered. |
|----------------|------------------------------------------|----------------------------------------------|-----------|-------|------------|
| 1              | W. B. Cluness                            | Chloral alone                                | 1         |       | 1          |
| 2              | M. Verneuil                              | Chloral alone                                | 1         |       | 1          |
| 3              | { MM. Dubreuil, La-<br>vaux, and Onimus. | Chloral and conti-<br>nuous current.         | 2         |       | 2          |
| 4              |                                          |                                              |           |       |            |
| 5              | Dr. Dufour                               | Chloral alone                                | 1         |       | 1          |
| 6              | M. Guyon                                 | Chloral alone                                | 1         | 1     |            |
| 7              | M. Le Fort                               | Chloral alone                                | 1         | 1     |            |
| 8              | Mr. Tay                                  | Chloral alone                                | 1         | 1     |            |
| 9              | E. R. Denton                             | Chloral, belladonna,<br>and potas. bromid... | 1         |       | 1          |
| 10             | Thomas G. Duncan                         | Chloral and Calabar<br>bean                  | 1         |       | 1          |
| 11             | Preston, Peter                           | Chloral and Calabar<br>bean                  | 1         | 1     |            |
| 12             | John W. Ogle                             | Chloral, belladonna<br>and ice to spine      | 1         |       | 1          |
| 13             | Mr. Croft                                | Chloral alone                                | 1         |       | 1          |
| 14             | Mr. Paget                                | Chloral alone                                | 1         | 1     |            |
| 15             | J. Suydam Knox                           | Chloral alone                                | 1         |       | 1          |
| 16<br>to<br>22 | C. Macnamara                             | Chloral alone                                | 7         | 6     | 1          |
| 23<br>to<br>25 | M. Garnier                               | Chloral alone                                | 2         | 2     |            |
| 26<br>to<br>34 | Dr. Widerhofer                           | Chloral alone                                | 10        | 4     | 6          |
| 35             | F. Auchenthaler                          | Chloral alone                                | 1         |       |            |
| 36             | My own case                              | Chloral alone                                | 1         |       |            |
| Totals...      |                                          |                                              | 36        | 17    | 1.         |

In the *Berliner Wochenschrift* in 1870 Dr. O. Liebreich stated that while different surgeons had made trial of the curative

value of the hydrate of chloral in cases of trismus, without any favourable result, he had in some cases, by the use of 3·5 grammes of the article, succeeded in causing an entire relaxation of the affected muscles. Dr. Liebreich considered that chloral does not act by removing the cause of tetanus, but simply by counteracting its effects, and that its use must, therefore, be persisted in so long as the muscular spasm continues to recur.

Dr. W. D. Yandell, the president of the American Medical Association, arrives at the following conclusions:—

1st.—That traumatic tetanus occurs in males in the proportion of four to one, and tends to recovery oftener in females.

2nd.—That tetanus is most fatal in persons under ten years of age; that it is least fatal between ten and twenty.

3rd.—That traumatic tetanus usually supervenes between four and nine days after the injury, and these cases represent the largest mortality.

4th.—Recoveries from traumatic tetanus have been usually in cases in which the disease occurs subsequent to nine days after the injury.

5th.—When the symptoms last fourteen days recovery is the rule and death the exception, *apparently independent of the treatment.*

6th.—Of all the forms of tetanus, that appearing in the puerperal state is the most fatal.

7th.—That chloroform, up to this time has yielded the largest percentage of cures in acute tetanus.

8th.—The true test of a remedy for tetanus is its influence on the history of the disease. (a.) Does it cure cases in which the disease has set in previous to the ninth day? (b.) Does it fail in cases whose duration exceeds fourteen days?

9th.—That no agent tried by these tests has yet established its claims as a true remedy for tetanus.—*Medical Press & Circular.*

*Syphilis in the Inferior Animals.* BY E. ANDREWS, M.D.,  
(Professor of Principles and Practice of Surgery in  
Chicago Medical College.)

The distinguished advocate of syphilisation in Paris, Dr. Auzias Turenne, proved, as he supposed, by inoculations, that while the inferior animals could have soft chancre, they were incapable of constitutional syphilis. This conclusion, though resting solely on the narrow basis of one man's experiments, appears to be accepted by all the eminent syphilographers of Europe; and being the prevailing doctrine, I have myself often quoted it as true.

On consulting a number of leading works on Veterinary Surgery, I find no allusion to syphilis, not in Gamgee, who doubtfully speaks of certain prima

but of no secondary it

inferior animals. A veterinary surgeon of this city, however, informs me that he has met three cases of what he considers well marked constitutional syphilis in breeding animals.

The first case was that of a bull in England. The first symptom was a chancre on the penis, accompanied with inflammation and swelling, and followed by secondary eruptions on the skin.

Case second was on a celebrated imported bull. The first symptom was a discharge from the prépuce, with swelling and inflammation. This was followed, first by moist ulcers in the mouth, and later by eruptions with large scabs on the skin.

Case third was that of a bear which was supposed to have a primary sore, which was followed by eruptions on the skin. The veterinary surgeon above mentioned says that gonorrhoea is very common in bulls.

These three cases are not enough to bring us to a decisive result, but they show that the subject needs a reinvestigation. Domestic animals are certainly less subject to syphilis than men; but they may, after all, have it in a mild and modified form. If experiments should prove the latter hypothesis, the question would immediately arise whether this modified form could be used like vaccinia, as a prophylactic against syphilis proper. Who will make the experiment?—*Id.*

#### *Death from pyæmia after the division of stricture.*

Dr. Keyes exhibited a specimen\* of death from pyæmia after the division of stricture. A Scotchman, aged forty, was last month sent to hospital from the workhouse. He was a stout, heavily built man, and complained of stricture with cystitis. A number 11 bougie (French scale) was readily passed and, as the patient desired to be relieved of his trouble, a Thompson's dilator was introduced, and screwed up to 30. The patient did not complain of any pain, until a No. 25 sound was passed, when he also had a chill. A subcutaneous injection of morphia was made into one of his arms. Shortly after this he passed into a condition of fever, which lasted until death. The chill lasted five minutes. His pulse went up very rapidly, so that the next day it was 130—140. His skin was hot and dry from one end of the disease to the other. He drifted into a condition of delirium on the third day and his skin became yellow twenty hours before he died.

It was discovered that there was a little tenderness beneath the scrotum and on the third day a lump about the size of a marble was discovered. The patient died on the ninth day.

At the autopsy it was discovered that there was extravasation of urine; that there had formed pus in the meshes of the

\* Before the New York Pathological Society.

scrotum: that there was a small abscess in the floor of the urethra, just in front of the stricture. There were also three abscesses in the prostate. The bladder was hypertrophied to a certain extent, and gave evidences of the existence of chronic cystitis. An abscess the size of a marble was found in the summit of the left lung; the liver and spleen were soft, but contained neither abscesses nor infarctions. There was no trouble with the kidneys. The cavities of the pleurae contained serous effusion, with a few floating flocculi.

The specimen was of interest as showing the results of division, viz.: tearing through of the mucous membrane and of the stricture tissue, and also as a case terminating with pyæmia as the apparent result of the operation. About five days after the operation the patient was recognized by two others, who had seen him in a strait-jacket, with violent *mania à potu*, three days before his admission to the hospital. This fact explained the reason why the condition of the patient was such as to invite suppuration so readily. In fact, this condition was very manifest in the behaviour of the hypodermic punctures, which degenerated into diffuse suppuration. The chill evidently did not have anything to do with the pyæmia as an initiative.

The heart was enlarged, the lungs cedematous, and the pericardium was adherent to the stomach.—*Medical Record.*

#### *Cancer cured by Electrolysis.*

Dr. Mussey read also a paper\* on *Electrolysis in Cancer*, illustrated by photographs and a wax model. He had been led, by the success of Dr. Nefel, of New York, to try the electrolytic treatment upon several cases of cancer; and though he could not claim uniformly successful results, still he had become convinced that much could be done with this treatment, if the cases were judiciously selected, and the agency employed properly appreciated and carefully applied. Scirrhus seemed to yield the most readily, and encephaloid to be the most intractable. As to batteries, he had found one of Remak's, made in Berlin, give the steadiest current; but it was inferior in most respects to a Stöhrer battery made by Curt W. Meyer, of New York. Drescher's had proved less steady, and more troublesome to keep in repair.]

Great patience and perseverance were required in all these cases, on the part of both operator and patient; and most of his patients had given out before he had effected what he deemed possible for them. One, however, a woman of infinite pluck and endurance, had satisfied him that a malignant tumor could be cured by electrolysis; and others now under treatment confirmed this view.

The woman referred to was thirty-six years old, in good

\* Before the American Medical Association.

general health. She had been suffering from a painful tumor on the back of the hand for about a year prior to the spring of 1870, when she consulted Dr. Mussey. The tumor had continued to increase, under various modes of treatment, and amputation of the hand had been proposed. On examining the tumor Dr. Mussey found it  $2\frac{1}{2}$  inches long by  $1\frac{1}{4}$  wide, and elevated from  $\frac{1}{4}$  to  $\frac{3}{4}$  inch above the surrounding surface. The whole hand was greatly swollen. The diagnosis of encephaloid cancer was made, and its removal at once determined upon.

An incision was made over the centre of the tumor, in the line of the middle metacarpal bone. The skin was dissected up, and the extensor tendon of the middle finger sacrificed, but the other tendons were saved. On opening the sheath of the tumor it was found highly vascular, and hemorrhage was profuse. A mass of encephaloid was removed. The middle metacarpal bone had wholly disappeared, and its adjacent metacarpals were involved, so that at least half their substance had to be scraped away. The wound was thoroughly cauterized with pure carbolic acid, and packed with lint. It was dressed afterwards with a carbolic acid solution, ten grains to the ounce of water.

Soon encephaloid granulations began to spring up luxuriantly, and the Doctor decided to try electrolysis. He at first used three needles attached to the negative pole of the battery, the positive electrode being placed in the palm of the hand. The current of six cups was passed for five minutes, that of eight cups for two minutes, and that of ten cups for three minutes. The next day the growth was larger than before, and he applied a flat rectangular electrode  $1\frac{1}{2}$  by  $\frac{1}{2}$  inch, covered with a single thickness of moist lint, upon the mass, and passed the current from—cups for fifteen minutes. This was kept up daily for four days, when the electrode was brightened and used naked, and the application continued daily for a week longer. Then a circular electrode about  $\frac{1}{2}$  inch in diameter was employed, being pressed into the mass. Each time the tumor would shrink a little, but the next day it would be as large as ever, and after a week it had actually gained in size. The woman was willing to endure anything to save her hand, and the Doctor, in no wise discouraged, now took a smaller electrode,  $\frac{1}{2}$  by  $\frac{1}{4}$  inch, and thrust and bored it into the mass as deeply as he could, and then applied the whole power of sixteen cups for twenty-five minutes. This produced a great frothing from the evolution of gas, and the tumor began to shrink more after each operation, so that at the end of a week it was perceptibly diminished. In a week more of these daily applications the diminution was so great that he gave a favorable prognosis. From the first of May until July the applications were made every other day. At the latter date the wound was cicatrized, and the patient was required to call only twice a week. In August she was using the hand to sew, and wearing the thin

ble upon the middle finger. This fatigued the arm a good deal, but the fatigue was relieved by electricity. She continued to call once or twice a week until Nov. 15th, 1870, when the treatment was stopped. It was now twenty-two months since the cicatrization of the wound, and sixteen months since the last application of treatment, and the disease showed no sign of return.—*Id.*

*Tænia Solium and Tænia Lata in a Child three years old.*

A case of this character, occurring in a boy three years and four months old, is reported by Dr. Joseph Ganghofer, in the *Kansas City Medical Journal*. The child had excessive craving for carrots, of which he would daily consume large quantities, both cooked and raw. After persisting in this unnatural appetite for six weeks, a *tænia solium* of about eleven feet in length was passed. The morbid appetite of the patient still continued, and, on account of the largely distended abdomen, the carrot treatment was advised. Within two weeks another worm was passed; this time a *tænia lata* ten feet long, which came away entire, inclusive of the head.

Dr. Ganghofer remarks that the use of carrots as a domestic anthelmintic in cases of ascariæ and lumbrici is no novelty, but their efficacy in dislodging the different varieties of tape-worms has never before been established. It would appear that the large amount of saccharine matter contained in the vegetable must have sickened the parasite, and thus have caused its detachment from the walls of the intestine.—*Id.*

*On the growth of the Nails as a means of prognosis in Cerebral paralysis.*

Dr. S. W. Mitchel (*American Journal of Medical Sciences*) states that he has observed in several cases of paralysis that the nails of the limbs of the affected side, on the occurrence of the accident, ceased to grow. This was proved by staining the roots of the nails with nitric acid. He was able to predict, in seeing after a time a white line of nail making its appearance, and before there were any other signs of improvement, that power was about to return to the limb, and that voluntary motion would shortly be restored.—*Id.*

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

**Furlough—Warrant Officers.**

23rd August 1872.

No. 888 of 1872.—It having been announced in G. O. No. 207\* of 1869, under the authority of the Right Hon'ble the Secretary of State, that the furlough rules of 1868 shall apply to all warrant officers holding veteran or honorary commissions, that Conductors and Sub-Conductors shall be entitled to furlough on sick certificate, and that corresponding furlough shall be granted to warrant officers in the Subordinate Medical Department, and to those holding the honorary rank of Assistant Surgeon, the Right Honorable the Governor-General in Council is further pleased, under the authority of Her Majesty's Secretary of State for India, to announce that those classes will be allowed to reckon the following periods of leave, whether taken in India or Europe, as service for pension:—

15 months in 12 years' departmental service.

|    |   |    |   |   |
|----|---|----|---|---|
| 20 | " | 14 | " | " |
| 24 | " | 16 | " | " |

Warrant officers holding that rank on this date may, should they elect to do so, continue on the rule hitherto in force, and reckon all leave in India as service and all leave out of India as against service. This option will not be given to men attaining warrant rank after this date.

Applications from warrant officers for leave to Europe must be accompanied by a duly certified statement of the applicant's service, and of the position in respect to service for pension under which the furlough is taken.

The provisions of this Order will have effect from this date.

\* Madras G. O. G., No. 77, dated 2nd March 1869.

(General Orders by the Commander-in-Chief.)

### Sanitary Returns.

No. 119.

28th August 1872.

G. O. C. C. of 31st July 1865, page 342, directing the submission of No. 1, Sanitary Reports of Regiments, Batteries, &c., (War Office Form 517 of 1864) to this office, is hereby cancelled, and Commanding officers of regiments and Batteries are requested, on receipt of the above returns in duplicate to forward both copies direct to the statistical branch of the office of the Inspector-General of Hospitals, British Forces, at the Presidency, and not to the Adjutant General as heretofore.

### Musketry—Medical Department.

No. 99.

4th September 1872.

Attention is invited to Horse Guards, General Order, No. 15, dated 1st February 1872, regarding the attendance of medical officers at target practice.

It is, however, to be distinctly understood, that if a medical officer is not actually on the ground he must be at hand and available at the shortest notice.

Whenever the troops are encamped for rifle practice on account of the distance of the range from barracks, a medical officer is to remain in camp, while the practice is going on.

### Gymnastics—Medical Department—Sanitary.

No. 106.

Horse Guards' G. O. No. 26 *Gymnasia*, dated the 1st March 1872, is re-published for general information and guidance:—

I. Medical officer in charge of regiments that have been quartered long enough at any station possessing a gymnasium, to enable men to undergo a training, will specially report on the progress, if noticeable, of such training on the muscular development and health of the men on their leaving the station, to the general influence of gymnastics in promoting a robust constitution. In fur-

therance of this duty they will frequently visit the gymnasium, and witness the measurements of the recruits on entering the course, and also the measurements on its termination.

II. The principal medical officer will refer to the subject in his annual sanitary reports, giving the substance of the information furnished to him by regimental medical officers, with any remarks thereon that he may deem necessary, concerning the utility of Gymnasia.

- (a) Madras G. O. C. C. 17th April 1867, p. 93.
- (b) " " 15th January 1869, p. 10.
- (c) " " 4th April 1870, p. 94.

### Passage—Pay and Allowances.

No. 114.

The following letter from the Secretary to the Government of India, Military Department, No. 827, dated the 13th April 1872, is published for general information and guidance:—

In reply to your letter No. 45C, "Pay," dated 8th ultimo, submitting the recommendation of the Right Honorable the Commander-in-Chief, that the provisions of the letter from this department, No. 172, dated 8th June 1871, be made applicable to all officers proceeding home on duty when detained at Bombay, on condition that the State is not put to the charge of a double payment, I am directed to acquaint you, for His Lordship's information, that the Right Honorable the Governor-General in Council has decided that an officer ordered to proceed to England on duty, under circumstances which, by the regulations, preclude his receiving Indian allowances after the date of receipt of the order, should be provided with passage on the first troop vessel leaving Bombay after that date that he can arrive in time to proceed by: and, for the period that may intervene between that date and the day on which he must leave his station to catch the said troop vessel, he may be retained for duty with his regiment or battery, receiving, whilst so employed, the Indian allowances which he was drawing when the order reached him.

2. But the Indian allowances in question cannot be admitted unless the officer proceeds, as above, by the first troop vessel; nor under circumstances which will involve a double charge upon the State.

### Transport—Medical Dept. Sub-Women and Children.

14th September 1872.

The Government of India have ruled, that the indulgence of free passage by river steamer sanctioned\* under certain conditions to the families of Hospital Assistants may be held to apply to the cases of Hospital Assistants proceeding to join appointments at foreign stations, such as Aden and the Persian Gulf, save in cases where they may be going abroad to join permanent appointments.

This order is to be entered as para. 244b and G. O.† 51, dated 15th March 1872, as para. 244a of Transport Regulations, Part I.

### Railways—Passages.

No. 125.

The following notification, by the Government of India in the Financial Department, is re-published for general information:—

No. 3507, dated 17th May 1872.—The Governor-General in Council is pleased to prescribe, in supersession of all former rules on the subject, the following rules specifying the class of accommodation to be granted to the several grades of Government servants when travelling free, on duty by rail:—

- I. All officers drawing salaries of not less than Rupees 350 a month shall receive 1st class accommodation.
- II. All officers drawing salaries of less than Rs. 350 a month, and not less than Rs. 25 a month shall receive 2nd class accommodation.
- III. All officers and servants drawing less than Rs. 25 a month, and not less than Rs. 15 a month shall receive intermediate class accommodation when available, otherwise 3rd class accommodation. All others shall receive 3rd class accommodation.

\* Madras G. O. C. C. 2nd July 1872, p. 204.

The necessary alteration to be made in para. 15, Transport Regulations, Part II., and the above order to be entered as para. 15 A.

### Dress.

No. 132.

The white tunic laid down in G. O. \*107 of 1872, will be worn by all unemployed Infantry officers of the Staff Corps and Indian Army.

### Dress.

No. 134.

The Commander-in-Chief desires it to be distinctly understood, that the white uniform worn by officers at mess during the hot-weather months is simply a mess dress, and must not be worn at entertainments elsewhere, except under the special sanction of the officer commanding the station.

This order applies to all branches of the service.

### Leave—Service, Officers—Passage.

In continuation of G. O.† 57 of 1872, the following letter from the Government of India, Military Department, to the Government of Bombay, No. 59, dated the 27th May 1872, is published for general information:—

“In reply to your letter, No. 2145, dated the 8th May 1872, enquiring how the time passed by an officer detained at the presidency for passage in a troop-ship, beyond the usual preparatory leave, is to count towards leave and service for pension, I am directed to state, for the information of the Government of Bombay, the Right Honorable the Governor-General in Council is pleased to rule that in cases where the detention is really unavoidable, the time should not count against an officer, but be considered to come within the preparatory leave.”

\* Madras G. O. C. C. 3rd June 1872, page 169.

† Madras G. O. C. C. 2nd July 1872.

**Leave.**

No. 172.

With reference to G. O.\* 304 of 1871, the Commander in-Chief is pleased to notify that every officer who proceeds to Bombay, with the view of obtaining furlough on medical certificate, must arrive at Bombay three clear days before the assembly of the Medical Board, (which meets every Monday and Thursday). In order that the terms on which he is entitled to leave may be known, he must be provided with a statement of his leave and service, prepared by himself in accordance with the orders marginally noted.

A. G. Cir. No. 99 of 1867, para. 8.  
G. O. No. 34 of 1869, para. 4, clause II.

\* Madras, G. O. G. 7th November 1871.

**List of Children.**

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 31st August up to this date for securing the following rates of pension.

| Names of Subscribers. | Children's date of birth. | Sex.      | Rates of Pension secured. | To what period.          | Payments how made.                            |
|-----------------------|---------------------------|-----------|---------------------------|--------------------------|-----------------------------------------------|
| J. T. Williams ...    | 5th August 1872..         | Male ...  | Half ...                  | To 18 years ...          | By Donation and Subscription.<br>By Donation. |
| J. Henderson ...      | 9th October 1872..        | Female... | *1-3rd ...                | To 21 years ...          |                                               |
| Do. ...               | Do. ...                   | Do. ...   | Full ...                  | From 21 to D. or M., &c. |                                               |

N. B.—The rates of pension marked thus\* are additional to those previously secured.

MEDICAL FUND OFFICE,  
FORT ST. GEORGE,  
30th September 1872.

## CORRESPONDENCE.

## WATER ANALYSIS.

*To the Editor of the Madras Medical Journal.*

SIR,—I trust you will spare me a small space in the Journal that I may very briefly reply to Mr. Nicholson's rejoinder in your last number, concluding so far as I am concerned, this discussion.

Under the first heading of the rejoinder Mr. Nicholson still insists upon holding me solely responsible for "the scheme," and to this I have only to reply that my coadjutors did take a large part in the compilation, and for example I may state, without I think breaking confidence, that the very process for alkalies of which Mr. Nicholson has had so much to say was inserted by one of them in the place of the barium method which stood in the original manuscript.

Under his second heading, Mr. Nicholson has modified the statement, by the accuracy or otherwise of which I elected to stand or fall. That statement was, to use his own words, "The author of the scheme here distinctly commits himself to the statement that ignition of sodium sulphate with ammonium chloride changes the former into sodium chloride. Little or much sulphuric acid can make no difference in this reaction. *This statement is without the slightest foundation in fact,* (the italics are Mr. Nicholson's). Sodium sulphate ignited even with a considerable excess of ammonium chloride shows no signs of change, the weight remains unaltered, and the solution of the residue gives no indication of chloride being present." That Mr. Nicholson was wrong in making this statement he now acknowledges, but to that statement, and its inaccuracy, I hold him, and, therefore, I do not renounce the scheme. As to Mr. Nicholson's experiments they are not in accord with results which I obtain, but I reiterate (see my letter in the August number of the Journal) that I have not advised in practice chloride of ammonium equal *only* to the weight of the sulphate of sodium should be employed. However, as to whether this conversion should be made use of in analysis, I am willing that, as against Mr. Nicholson, the scheme should be in accordance with Fresenius and Sutton. Moreover, as I stated in my reply, if the scheme were in error on this point, its usefulness for the analysis of potable waters would be but little impaired, for only in very exceptional cases is it needful making such examinations, to determine the alkalies.

Mr. Nicholson concludes what he has to say under his third head with a powerful tirade against my incompetency and blind faith in authorities. Now, as to authorities, I have referred to them so largely because in his original paper Mr. Nicholson seemed to charge me with ignorance of them, and because many of our readers must be unable to verify for themselves the accuracy or otherwise of our counter statements, and will, therefore, be glad to have the evidence of "the authorities" on the points at issue. As regards Mr. Nicholson's strong language, I regret he should have so mistaken the exigencies of the case as to believe that they compel him to the tone of criticism which he has adopted towards a brother Medical Officer, engaged like himself in serving Government to the best of his ability, and who was called on, in the course of his duty, to undertake a work which had to be carried on at great expense of time and labour, and under the pressure of other duties which were in themselves quite sufficient to occupy the time of any one man.

With reference to the case of the wells in Fort William, I think I can put it before Mr. Nicholson in such a way that he will acknowledge that I had fair grounds for my condemnation of them. And in the first place I can assure him that I have not been unmindful of marine impregnation as a source of impurity in the Fort waters—this he will see if he will refer to my reports on the tanks on the glacis, in which I have distinctly recognised the liability to such impregnation. But take the case of the Chowringhee Gate well. It is situated in a small ravelin, two sides of which are occupied by the huts of the married sepoys; in the centre of the ravelin is the sepoys' bazaar, and around the well full half the washing of the native regiment in the Fort was carried on; and I can say from personal observation that the vicinity of the well, notwithstanding the platform and drain, was always in a soppy state. Well then I had learnt from experience that whenever sepoys have used a well in this way for any length of time it almost as a matter of course becomes impregnated with saline matters. Further when I come to compare the waters of the wells in the Fort, I find in this one 20.5 grains of chloride of sodium to the gallon, while the Treasury Gate water contains 1.8 grains of chloride of sodium to the gallon, and that the carefully preserved Sudder Bazaar well 5 grains only to the gallon. All these considerations, together with what I witnessed of the way

in which the wells were used, was quite sufficient to lead me to condemn them, especially since an abundance of comparatively safe water was readily obtainable, and because it has been a principle on which I have uniformly acted, that a water source should be rejected if it is exposed to any possible source of contamination. Acting as I have done upon this principle, I am ready to confess that I may have erred in condemning some wells, but the errors have been on the side of safety, and I have always avowed the principle which I have taken as my guide.

I am, &c.,

F. N. MACNAMARA.

CALCUTTA,  
19th September 1872.

*To the Editor of the Madras Medical Journal.*

SIR,—I hope you will kindly allow this letter to appear as a postscript, or note to my letter of the 19th, for in that letter, I, by an oversight, omitted to notice Mr. Nicholson's statements in the second paragraph of page 206 of your Journal. That paragraph is so full of unfounded and disparaging assertions regarding me that I cannot pass it by. I quote it in full as well as a sentence from the top of the same page.

"But Dr. Macnamara with two years' experience of Indian water analysis, still laboured under the idea that nitric acid is always a product of animal pollution and that an excess of chloride is owing to the same cause. He finds a small amount of nitric acid and an excess of chloride, and at once jumps to the conclusion that the wells are contaminated by human and kitchen refuse."

"The fact is that Dr. Macnamara then as now took his chemistry and his hygiene out of an English book. He had seen it stated that in England nitrates when existing in any quantity, are generally the oxidized products of sewage contamination; he did not reflect that, possibly in India, the great producing countries, the occurrence of nitrates in water may be quite normal. He might be the first to think of ascertaining by experiment whether such might be the fact. He jumps at once to 'the authorities' and condemns every Indian well as containing nitric acid. Speaking of the excellent spring water of the hill (page 32 of same report) he says, 'the drainage which sinks into the subsoil of the hill, of course, is represented by the nitric acid which is present in it.' The most excellent quality, happen to contain a small amount of nitric acid, estimated at one grain per gallon; accordingly they are declared to be contaminated by oxidized sewage."

Such mistakes might be expected of a beginner just out from England, imbued with the 'previous' 'contamination' theory; but to find

them perpetrated by the superintendent of two years' systematic analysis is too bad. Dr. Macnamara might have been expected to learn something by experience during his campaign against the potable waters of Bengal; he appears to have learnt nothing. With a blind reverence for "the authorities" he made not the slightest use of the splendid opportunities before him; with unquestioning faith in home theoretical views, facts seem not to have existed for him; with an apparent incapacity for appreciating what is evidence, he condemned good waters wholesale."

I must accuse Mr. Nicholson of deliberate misrepresentation in writing as he has thus of me not only in the sentence I have quoted, but in others of like effect in the same paper.

I will quote from the report, containing that on the Murree waters on which Mr. Nicholson comments, proving that he has that report, and has read it.

*Peshawar.*—Mackeson's well—"the water of Mackeson's well must be pronounced good and wholesome." This water as may be seen on referring to the table of analyses contains nitric acid.

*Attock.*—Referring to the water of well No. 5, "there is not, however, anything in the composition of the water of the well, as shown by its analysis to render it unwholesome." This water, see Table of Analyses, contains nitric acid.

*Verorepora.*—Referring to the Hospital well, "the water contains a large amount of nitrates, salts, which are not present in the waters of the neighbouring wells, while it contains double the quantity of readily oxidizable organic matter, and of chlorides that they do. This being the case, I strongly urge the recommendation made in my former report for the provision of another well for the supply of water to the sick in Hospital." It is evident that I condemn this water on far other grounds than that it simply contained nitrates.

*Ajmere.*—"The water in use at the station is generally considered of fair quality." All the wells reported on contain nitric acid. (See Table of Analyses.)

*Jubbulpore.*—"The water of No. 118 appears to have got a bad name, yet the water, as shown by its analysis, is very good." The water, as shown by the Table of Analysis, contains nitric acid. The water of the other wells supplying the European Troops is also good. The water of almost all these wells, see Table of Analyses, contains nitric acid. "Nitric acid is present in almost all the well waters of the station, and it is also present in the soil; there is apparently

no reason to attribute its presence in the waters to sewage contamination."

*Saugor.*—"Analyses show that the water of most of the wells in use by the European Troops is fairly good; the best is that of a well, unnumbered, which is near No. 11 barracks. The well is a new one, and its water is decidedly more pure than that of the neighbouring wells; it however contains a large quantity of nitrates, but as the amount of organic matter is not large, and but a small proportion of chlorides, I have no doubt that the nitrates result from the oxidation of organic matter which may have been deposited in the soil in past times."

*Nowgong.*—"It appears from Dr. Thomson's analyses that the *unpolluted* water of the station contains 15 grains or less to the gallon of dissolved constituents, including about  $2\frac{1}{2}$  grains of common and from a half to two grains of nitric acid, the nitric acid is present not only in the vicinity of the barracks, but in the uninhabited part of the cantonments." Here I speak of waters containing much nitric acid as being *unpolluted*.

*Nagode.*—"The supply is abundant, and where the wells are taken care of is fairly good." The water of all the wells contains nitric acid. (See Table of Analyses.)

*Seetapore.*—"The nitric acid is present in large quantity in the water of some of the wells, and may be to a certain extent derived from sewage pollution, but I suspect it is present in the soil over the district in which Seetapore stands, and I do not, therefore, look upon its presence in any of the waters as necessarily indicating artificial contamination."

In the face of passages as the above, (and if Mr. Nicholson has the face of others of similar import in my fifth report, Nicholson has the audacity, for I cannot use any milder terms to pen and publish the sentences which I have quoted at the beginning of this letter—and this is the brother Medical Officer, and Professional Chemist, who, relying on his mis-statements as the above, has been doing his best to injure my professional reputation in the journals here and

at home. I will say no more, I leave Mr. Nicholson to his own reflections, and to the judgment of your readers.

I am, &c.,

F. N. MACNAMARA.

CALCUTTA,  
21st September 1872. }

#### A MEDICAL FUND.

*To the Editor of the Madras Medical Journal.*

SIR,—I shall feel obliged by your kindly giving insertion to the following.

I see that at the recent Examinations many gentlemen have passed for appointments as Assistant Surgeons in the Indian Medical Service. Some have by this time gone through the course at the Army Medical School and are already under orders for their respective Presidencies, and others are about proceeding to Netley; all of whom it is to be presumed will in time come to augment the numbers in the Junior Grades of the service.

The attention of all those, if this should haply reach them, as well as that of the Assistant Surgeons who joined the Service since 1860, I earnestly request to the fact that no such thing as a Fund Military or Medical now exists, in which we are allowed to participate, whereby one could hope to make a moderate provision for widow or children in the event of death. The Madras Fund has for its fortunate members a branch called the Annuity branch, which provides an annuity on retirement of either £200 or £400 a year, according to the length of service &c. of the applicant. Of course there is no such thing now for us and when one speaks of his exclusion from these privileges, however willing he may be to pay for them, as hardship and a grievance, he is sometimes met by the statement that the Junior members are better off now—*as* than they were formerly both as regards pay and promotion. This I deny, as although we get promotion after a certain number of years, and the pay is enhanced so as the actual number of rupees goes, still I affirm that in the absence of a Fund, for which no concession that has been made to us compen-

sates, as well as some other advantages possessed in former days, we are not better off.

The increased rate of pay does not more than counter-balance the depreciation in the value of money, and the increased cost of living in India makes it simply impossible for one with a family to effect a saving of any consequence, to enable him either to make a proper provision for widow or children, or supplement his wretched pension and admit of his retiring in his old age, when he feels that he has little more Indian work in him; and yet for these reasons hold on he must. Life Insurance as it is charged for in India makes it impossible for one with the moderate pay of an Assistant Surgeon, particularly if he has a family, to insure his life for an amount that would give his widow anything that she could, with a family, live comfortably upon and educate her children.

What we want then and that urgently, is a Fund, or something of a similar character under the support and management of Government, which would by moderate monthly deductions from one's pay as was done in the case of the old Fund give one the means of placing his family beyond the reach of want in case of his death. Government need make no sacrifice nor incur any expense, all I would ask is the establishment of the institution whatever may be its name and granting the necessary guarantee and supervision. This is a matter which vitally concerns a great many who are already in the service, and all those who are about entering it. Why the former have hitherto made no move in the matter I cannot understand, unless it may be that they trust to some lucky piece of legislation in the future to supply their wants, or to Governments seeing the necessity of it and doing for them that which the old H. E. I. C. did for its Officers and which unhappily was undone during the reformation of Sir Charles Wood at the India Office. Why it was a way with I never could learn, unless it was to facilitate the amalgamation of the two services which was then about, but which came to nothing as every body knows.

If Government had the rate of interest granted too high it might have its privileges in the case of the new admission the lessened advantages all would have been on the principle that half a loaf is better than no loaf. I think then it behoves all those who are connected individually or collec-

tively do what in them lies towards the attainment of such a desirable object as a Fund. The heads of the Indian Medical Service in the three Presidencies are quite aware of our wants and would be, I hope, equally willing to help us, but I certainly think that the commencing move ought to be made by us Juniors.

With reference to the question of promotion it is not a cheerful one to dwell upon. It is true that we get promotion to the ranks of Surgeon and Surgeon-Major after a certain number of years' service, but beyond the latter grade I think I am not far wrong in saying, that 95 per cent of us will never go; what with the reduction in numbers in the administrative grades, the age-disqualification, and the number of casualties that are likely to occur before the completion of 28 or 30 years' service, before which promotion to the Inspectorial ranks is not to be expected.

I venture to say that there are many retired Indian Medical Officers who are now living at home on a fair competence who would never have been able to retire were it not for those Funds from which unhappily so many of us are now excluded.

I am, Sir,

Your very obedient servant,

JUNIOR.

## TO CORRESPONDENTS.

Assistant Surgeon L. C. NANNEY, H. M.'s 3rd Regt. P.  
L. I.—*In our next.*

P. S. MOOTOOSWAMY, Native Surgeon—Manargudi—*In  
our next.*

Assistant Surgeon F. M. RICKARD—H. M.'s 25th Regt.  
M. N. I.—*Received with thanks.*

## BOOKS, &amp;c., RECEIVED.

Doctor, *August 1st.*

Medical Press and Circular; *August 7th, 14th, 21st, 28th.*

Journal des Connaissances Médicales, *August 15th, 30th.*

Jamaica Church Chronicle, *June 17th.*

Medical Record, *July 1st, 15th, August 1st.*

Report of the Sanitary Commissioner for Madras for the  
year 1871.

The Secretaries, ROYAL 'MEDICAL BENEVOLENT' FUND SOCIETY OF  
IRELAND, acknowledge with many thanks receipt of the follow-  
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260

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MONTHLY JOURNAL  
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## ORIGINAL ESSAYS.

ART. XVIII.—*On the Antiseptic treatment of Small-pox.*

By Assistant Surgeon L. C. NANNEY, H. M.'s 3rd Regi-  
ment P. L. I., Secunderabad.

AMONGST the many discoveries and improvements that have lately taken place in Medical Science, nothing is more striking than the large number of newly invented preparations which have been recommended as remedies for almost all diseases, and the introduction of which has caused material change in the treatment of several maladies. There is, however, I regret to say, a strong tendency to apply them in an empirical manner; the new remedy, which has been of marked benefit in one class of diseases, being too frequently applied without discrimination to all. The result of this naturally being a failure in some instances and, what is much worse, most detrimental and even fatal in others, a prejudice may thus arise against the use of a remedy which, if judiciously handled, might prove of incalculable benefit, when restricted to those diseases to which it is specially adapted. A course must therefore be steered between the two extremes, neither rejecting the results of recent discovery, nor too readily admitting them as specific in all complaints. To further this end, the experience of all who have had occasion to adopt any newly recommended plan of

treatment possesses a certain value, and should be recorded for the benefit of others.

With this end in view I subjoin a few remarks on the Antiseptic treatment of small-pox by Carbolic acid—a remedy which, of late, has won for itself considerable reputation, and to which, during a recent epidemic, I gave a fair trial. The proportions in which I applied the acid were, as one to eight of oil, with which I caused the papules, vesicles, and vesico-pustules, to be painted with a feather or brush, three or four times daily; the result being that, in those cases in which the treatment had been adopted from the earliest stages of the disease, it was arrested at the vesico-pustular and never reached the suppurative stage. Even in cases that, at the onset, shewed symptoms indicating a severe attack; the vesico-pustules scabbed over and dried up, and the sympathetic irritation was exceedingly trivial, nor did pitting ultimately supervene.

Of twenty-five cases which were under my immediate observation in tents provided for the purpose, eighteen proved successful, having been treated, from the earlier stages of the disease, by Carbolic acid; one died from pneumonia. In the six other cases the disease had gained considerable ground before admission, and only one proved successful. Of eighteen cases treated in the lines by my dresser, none of which had been brought forward at the commencement of the disease, five died, in which the Carbolic acid had not been tried, and two died under treatment. The majority of these, however, having been kept concealed until the disease had reached the confluent stage, with accompanying delirium, afford no fair criterion as to the value of the remedy. The sensation experienced by the patient, on the application of the acid, is a slight burning which speedily passes off, allaying all irritation. The odour, which is a peculiar one, cannot be considered unpleasant, when contrasted with the foetid exhalations proceeding from those suffering from small-pox.

I have found the patients willing and even anxious for the application of the remedy, after once experiencing the results. In the treatment of the disease during this epidemic, I had the advantage of contrasting former experiences during three previous epidemics, one in India, two in England, in which different modes of treatment were adopted by myself and other medical men.

On several occasions, finding the application of Carron oil to be extremely soothing in allaying the irritation; it did not, however, check the disease in its onward progress, though affording great temporary relief, and thus obtaining valuable rest for the sufferers, so essential under the circumstances.

My experience during these four epidemics of this virulent malady, has led me to attach great importance to preventative measures, of which vaccination, though doubts have recently been thrown on its efficacy, stands in my opinion pre-eminent. I have observed that it either wholly averted the disease, or caused it to assume so modified a form, that the patients were able to go about their accustomed duties, shewing the slight constitutional disturbance that existed. I could wish that the advantages to be derived from vaccination were more universally credited, especially among the native population; as however the dislike to it is not readily overcome, and small-pox is a disease which is frequently epidemic in this country, and indeed, of late, in all parts of the world, it is of importance that the few remedies that exist should be widely made known and carefully tried.

I consider the Carbolic acid a most valuable antiseptic and deodorizer, and can add my testimony to the efficacy of this plan of treatment. I am of opinion that Carbolic acid might also prove valuable as a prophylactic in times of epidemics, and might be applied in various forms in other diseases of a similar character.

#### ART. XIX.—*Contributions to the Practice of Midwifery.*

By P. S. MOOTOOSAWMY, F. O. S. L., Native Surgeon,  
Civil Dispensary, Manargoody, Tanjore District.

PLACENTA PRÆVIA.—Govindammall, æt. twenty, another of three children, of whom two are living.

About 3 past 4 in the evening of the 15th March 1872, I was requested by a midwife of the town, a former pupil, to visit a female who was said to be in a dying state from flooding. As the woman lived not far from the Dispensary I saw her at once, and found her on the floor of a low miserable hut, without any bedding, and lying in a pool of blood, with ashes plentifully strewn about her. She was

perfectly insensible and in a state of extreme exhaustion, indicated by a cold clammy skin and imperceptible pulse.

On examination I found the vagina filled with clotted blood, on removal of which I ascertained that all but a small portion of the os had placenta adhering to it; that the os was dilated to the diameter of a rupee, and that the head was presenting. As the woman was in such an exhausted condition I administered arrack with broth, first plugging the vagina and applying a binder to the abdomen, and wet cloths to the vulva. The broth and arrack were repeated at short intervals, and re-action took place in about an hour. The pulse returned and the skin became warm; but consciousness was not restored. I removed the vaginal plugs, and found that the os uteri was well dilated, and the placenta almost entirely detached. I ruptured the membranes, and extracted a dead female foetus by means of the short forceps. Cold douche to the hypogastrium, and grasping and kneading the uterus ensured contraction of the organ, and expulsion of the placenta. A compress was then applied, and the binder re-adjusted.

The woman did not recover her consciousness until the afternoon of the third day, when some symptoms of uterine inflammation presented themselves, and were subdued by treatment.

The woman made a rapid recovery, and left her room on the 17th day after her confinement.

*Remarks.*—There are several points of interest in this case to which attention might be drawn, and which might, perhaps, obtain for it a place in the columns of the *Madras Medical Journal*.

The first circumstance worthy of notice is the rapid recovery of the patient from the extreme state of exhaustion to which she had been reduced by the hæmorrhage. When she was first seen by me she was cold and pulseless, but in an hour after the administration of stimulants reaction was established and uterine action had taken place to the extent of dilating the os uteri and detaching the placenta, at least that portion of it in the cervical zone below what Dr. Barnes designates, the "Lower Polar Circle." Although the patient did not recover her consciousness quickly, she rallied wonderfully, and, notwithstanding the supervention of some untoward symptoms, was able to leave her hut in little more than a fortnight.

The next important feature in the case is, I think, the absence of hæmorrhage after reaction had set in, a circumstance attributable, no doubt, to the contraction of the uterus and detachment of the placenta, which the unaided efforts of nature had effected. If, as some suppose, the source of the hæmorrhage is placental, or for the most part placental, it is difficult to understand how the detachment of this organ, consequent on reaction, was not followed by hæmorrhage; but if we believe, with Dr. Barnes, that "the great hæmostatic agent is contraction of the uterine fibre," then it becomes very clear that the contractile action of the uterus which disengaged the placenta from its walls, also closed the utero-placental vessels, and checked the flooding. The detachment of the placenta again favoured dilatation of the os, and the rupture of the membranes tended to increase uterine contraction.

The case of this poor woman may be adduced as an example of the reckless disregard of life brought about by the peculiar religious belief of the poorer and uneducated classes of natives. Enquiry into the history of the patient elicited the fact that about a month previously she was suddenly seized by flooding which soon ceased. This was ascribed to the female having in some way incurred the displeasure of a particular god, whose wrath was appeased by certain incantations, charms and offerings, which were had recourse to. Ashes were on that occasion, as on the present, plentifully strewn over her as part of the propitiatory ceremony, and she was made to drink a mixture of ashes and water. The cessation of the hæmorrhage was attributed to the acceptance of the offerings made, and all went well for a time. On the next occasion of the return of the flooding, the same means for its arrest were employed, but, unfortunately, in the opinion of the patient's friends, they failed to appease the wrath of the deity, and the woman was left to die.

Sixteen hours after she had been given up by the individual who performed the ceremonies, the services of a midwife were sought. None but the very poorest of the natives of certain castes will seek admission into hospital, when there is reason to fear a fatal termination to their illness, for when death occurs, their prejudices prevent their friends from conveying the corpse to their home prior to burial; and it is considered degrading to be buried from a public hospital.

ART. XX.—*Fibro-cystic tumour. Removal by operation.*  
By Assistant Surgeon F. M. RICKARD, H. M.'s 25th  
Regt., M. N. I.

Perumaye, female, aged 42, Kolah caste, was admitted into hospital, on the 26th April 1872, with the following history of her case. Four years ago she noticed a small swelling in the right breast. At this period the catamenia ceased and she suffered from slight constitutional disturbance for a short time. The swelling gradually increased, until she was prompted to seek medical advice. This she did and came to the Garrison Hospital in April 1871. The tumour had then attained a large size and extirpation was had recourse to.

The operation was performed on 30th April 1871, by Assistant Surgeon Smith, who was then acting for Doctor Fletcher the Garrison Surgeon.

I find the following entry in the hospital records:

Perumaye aged 42, female, Hindoo. Multilocular cystic tumour of right breast, was removed by Doctor Smith on 30th Apr. 1871. Weight 3lbs. 8 ozs.

The tumour recommenced growing about 8 months ago, and has increased very rapidly. Her health is much impaired and she suffers considerable pain and inconvenience; loss of appetite, restless nights &c.

In order to render the description of the tumour easier to be understood, I have had two photographs taken of it. The first showing the whole of the upper portion of the body, with the tumour as seen from the front. In this picture, the tumour can be looked at, as in comparison with the trunk. The other photograph represents a side view of the tumour with the fungus-like projection which resulted from the giving way of the skin. The mass appears to take its origin, from a small portion of the mammary gland which was left unexcised, and grows upwards, on the ribs, until it reaches the axilla. It there widens laterally, filling up the axillary space, forcing the arm upwards and is more apparent in front than

Present condition with description of the tumour.

*Dimension Right Side.*

From upper part of spine to top of sternum 29 inches.

From middle of spine to ensiform cartilage 23 inches.

Circumferential measurement of tumour from anterior superior iliac spine to right scapula and of right clavicle to base, 11 inches.

*Left.*  
From upper part to top of sternum 29 inches.

From middle of ensiform cartilage to base, 23 inches.

outwards. The d.

behind, by reason of the resistance made against the growth of the tumour. The pectorales major and minor and latissimus-dorsi and other muscles, by the tumour is bound down very firmly by the pectorales major and minor and the fascia of the thoracic region. To the touch it feels hard, smooth, and regular. Near the base, at the outer side, is a large fungus-like projection, about the size of the clenched fist, which was caused by the skin giving way about a week since, when there was considerable hemorrhage. The consent of the woman having been obtained, I determined to operate and relieve her of the enormous mass.

On the 2nd Instant, assisted by Doctor Long, Doctor Ritchie, who also kindly administered chloroform, and Assistant Surgeon Harvey, who was then in the

The Operation.

station, I proceeded to operate. The arm being drawn upwards, to above the level of the shoulder, and slightly backwards, I made one straight incision, from the centre of the axilla, down the outside border of the tumour to the fungus-like projection, which I encircled with two sweeps of the knife, at the same time being careful to remove enough of the unhealthy skin around the opening, to a width of an inch or more. I then completed the incisions by running another small one, about four inches long, at right angles to the commencement of my first cut and parallel to the clavicle. This finished the incisions. I then reflected back the flaps and endeavoured to get my hand between the tumour and the ribs, but was unable to do so, from the firm attachments that existed between them. Several layers of fibrous tissue had to be cut through before I could get to the ribs. When the latter were once reached the tumour was quickly dissected away from them. The great difficulty that then presented itself, was, to get the hand above the summit of the tumour, and thus detach it from the axillary space. After thoroughly dividing the pectorales major and minor, and cutting through numerous layers of dense fibrous-looking tissue, I managed to get my hand above the tumour, then partly by force and partly by the aid of the anæsthetic, the whole mass was turned out of the axilla. It remained, but to dissect the tumour away from the latissimus-dorsi, to which it was intimately adherent. fascia and fibrous bands. Only one artery required to be tied, viz., the long thoracic. There was a good

haemorrhage, which quickly the bared surfaces being sponged with oil. The flaps were then adjusted, and with silver wire sutures, and the side dressed soaked in Carbolic acid and oil. There was considerable difficulty in restoring the patient after the operation, and for some hours the pulse was very low, requiring constant care and watching, and the frequent administration of stimulants. The operation lasted 40 minutes, 7 drachms of chloroform were used, by means of Bloxam's patent chloroform bottle. Not a single bad symptom presented itself and the patient made a rapid recovery. The flaps joined well on the exposed surface of the walls of the chest and healthy pus was freely formed. The patient was discharged from Hospital well, on the 2nd of June, just one month from the date of the operation.

*Remarks.*—The tumour on removal weighed 6 lbs. and when cut through presented a fibro-cystic appearance, but unfortunately no microscope was available, to form a definite opinion as to its real character. The real difficulty in the operation was found when it was necessary to get above the summit of the tumour. In fact, as the whole of the axilla was filled with the mass, and that mass firmly wedged into the space, by continual increasing force, caused by the growing of the tumour from below upwards, it was impossible to attain the object, without dividing the two pectorales. And even after division of these two muscles, great force, and some use of the knife was requisite, to tear away the mass from the pectoralis muscle. After this was effected, the axillary artery was plainly seen beating, through a small thickness of cellular tissue. A strong pedicle of thick fibrous tissue of nearly an inch in width about  $\frac{1}{2}$  inch in thickness, extended from the seat of the tumour operation into the substance of the tumour and freed it in its place, inferiorly. This pedicle had before the hand could be passed between the ribs, the beginning of the operation. In the instrument used for the administration of the anaesthetic I would add my testimony to the great value of Bloxam's bottle. It is exceedingly simple and at the quantity consumed can be read in the small quantity of the anaesthetic which can be seen, that there cannot possibly be an error. In con-

clusion, I would beg to state, that the Municipal Commissioners of Cannanore came forward with great generosity and kindness of heart, and placed the sum of Rupees twenty in my hands, to be expended in supplying the patient with comforts and necessaries, which the poor woman was greatly in need of, as she was a pauper, a class of patients for whom no provision is made by the Government in the Garrison Hospital.

*Compound fracture of left Femur, from Gun-shot wound.*

Rdoo, male, aged 32, was admitted into the Garrison Hospital, on the morning of the 13th May, having been brought a distance of twelve miles, in a muncheel.

The following is the account that he gives of the accident. He was returning to his house about two o'clock in the morning, when about 40 yards from him, a man was coming in an opposite direction and obliquely, carrying a gun, with the muzzle to the front. He says that suddenly he felt a severe shock and great pain in his left thigh and at the same time heard the explosion of the other man's gun. On being hit he fell to the ground, but the other man ran away. He lay on the spot where he fell about an hour, until he was picked up by some people passing who removed him to his house.

On examination, the femur was found to be completely severed, about an inch below the great trochanter, and the bone much comminuted. There was a round wound where the bullet entered, about the size of a rupee in diameter, with the muscular substance bulging out of it.

No wound of exit could be discovered. The wound of entrance was about one inch below the point of the great trochanter, and directly inwards. The probe was used carefully, but nothing could be detected, but broken up bone. No bullet could be felt. There was no haemorrhage from the wound and the effects of the shock had all passed off. The injured limb was carefully placed on a double inch plane iron-splint and the wound dressed with carbolic acid and oil.

20th.—Since his admission, the patient has been kept quiet and in the same position. All swelling of the limb has gone, and the wound of entrance by stronglaudable pus being freely formed and evacuated by strong again carefully examining the whole limb, a deal of venous

hole was found, about the size of a 4-anna piece over the tuber-ischi of the same side. This hole must have formed since his admission, as he was carefully examined when brought to hospital, and nothing of the kind then existed. From this wound healthy pus is discharged. The latter wound to be dressed like the former.

25th.—On this date, two or three small pieces of bone came away from the wound of entrance, their structure being cancellous. Both wounds looking healthy.

June 12th.—Up to date, the patient has continued in the same position. Bed sores have been carefully avoided, by frequently bathing the back, loins, and buttocks with weak brandy and water. No pieces of bone passed away during the month, and union is firmly established. The patient's health continues good and his appetite remains unimpaired.

July 13th.—A piece of bone, half an inch in length, has come away, and the sore over tuber-ischi has healed. The wound of entrance continues open.

August 10th.—The splint was removed this morning; there is shortening of the limb about two inches and swelling over seat of fracture due to callus. External wound still open, no pieces of bone have come away since last report.

31st.—External wound closing, discharge very slight. Patient insists on going to his house and his friends have come for that purpose. I have desired him to return and show himself, general health perfectly good. Discharged.

#### ART. XXI.—GENERAL HOSPITAL REPORTS. *A Case of Suppression of Urine*, under the care of SURGEON-MAJOR

J. L. PAUL, M. D., Surgeon to the General Hospital.  
Reported by E. F. Brockman, Resident Assistant-Surgeon, General Hospital.

mentreappen, a ryot, aged sixty years was admitted into cholera Hospital on the 28th May last with the state of Mr. B. he was unable to pass his urine. In the hypo- and so groin there was an apparent distension, and with- off at any time examination in the out-patients' room being used viz., 3 cause of the urgency of the case, the patient be any waste, without any loss of time into the Surgica

Division. On a closer inspection of the case in the ward the fulness of the hypogastrium was not visible, and to strengthen the supposition that none of the urinary secretion was collected in the bladder, a large catheter was passed, but no urine drawn off. On enquiry the patient stated that he had scarcely passed any urine during the preceding seven days; and that what little was voided caused him to strain much. He denied having ever suffered from gonorrhoea; he stated that he was a temperate man, and that he had always enjoyed good health with the exception of an illness four years before similar in character to that from which he is now suffering. Native medical treatment at that time relieved him, but on this occasion it failed; on the occasion referred to the patient passed a few small calculi. On admission the eyelids are slightly puffed; he complains of a pain in the loins, and in the anterior wall of the abdomen in each inguinal region; pulse is quiet; he looks anxious, but is not drowsy; is rather slow in comprehending questions put to him, and in making replies. As above narrated, a large-sized gum-elastic catheter was removing any urine from the bladder.

Febrile action has passed off.

Warm bath.  
water.

Temp

5 p. m.—Total urine one ounces. Patient is feeling better. Cont. treatment.

6th June 6 A. M.—Bowels acted frequently at night, the increased action being caused in all probability by the potash salts in the mixture and in the impure diet. Urine has a sp. gr. of 1012, and suspends no albumen. Describes himself as being quite well.

7th June.—Absconded from hospital.

#### *A Case of Vesical Calculus. (Phosphatic.)*

Appavoo, a washerman by trade, aged sixteen, and residing at Wasermanpettah, was admitted into the ward of the General Hospital on the 7th July 1872 n.

fourth part of the quantity passed. Complaints of feeling drowsy. Skin is dry.

Temp. 99°. Pulse 94. Resp. 31.  
Hot air bath.  
Imperial drink O iii.  
Barley water O iii.

R Potas. Acetatis gr. xv.  
Vin. Colechici m. xv.  
Infus. Digitalis 3 ss.  
Aque 3 ss.  
Quarta quaque hora.

5 p. m.—Bowels acted twice. No urine passed during the day. The hot air bath caused profuse diaphoresis. Is inclined to doze.

Cont. treatment.

Temp. 101°. Pulse 92. Resp. 33.

31st May, 6 A. M.—During the night passed  
times, amounting in all to 4. No urine passed.  
Bowels not acted. Urine  
giving an acid reaction.

As yesterday,  
the leeches to  
be.

Drank during  
the night two pints of Imperial  
drink. Bowels acted once normally.  
On the application of the leeches, patient passed  
times of urine. Heart's sounds equal in all  
regions. Breathing sounds normal.

Temp. 100° 8. Pulse 100. Resp. 32.

Haußt. salin. purg. 3iv. statim.

30th May, 6 A. M.—Bowels acted four times, but no urine  
passed. The patient has passed a restless night and  
complains of a feeling of tightness which extends from the  
upper regions anteriorly to the fore part of the abdomen.  
During the night drank two pints of fluid. On testing the  
small quantity of urine passed yesterday with heat and  
acid, albumen was precipitated to the extent of one-

13th July.—Suffer contains a large deposit of muc. Some febrile action present. Pulse small and quick. Tongue coated with a white fur. Morphia hypodermically.

R. Acid. nitrici dil. ℥ xv.  
Inf. Gentianæ ʒ i.  
ter in die.

14th July.—Lithotrite again introduced, and three re crushed.

Cont. treatment.

Lithotrite was introduced this day and crushed. A third large mass was brought in the grip of the instrument.

15th July.

Act. Hyosecy. ʒ i.

16th July.—Dilatation of the urethra by a No. 12

lithotrite was once more introduced, but on account of the restlessness of the patient, the stone could not be seized. A slight hemorrhage, which soon ceased, followed the withdrawal of the instrument.

1st August.—For the last two days has had febrile paroxysms and since yesterday diarrhoea has come on. For the former Tinct. Aconiti was ordered, and for the latter the Pulv. Cretæ Aromaticus cum Opio.

August 22nd.—Since the last date the patient has gradually improved, the febrile action has subsided, the diarrhoea has ceased, and beyond the symptoms caused by the presence of the foreign body in the bladder he has comparatively speaking been doing well. This morning the lower bowels having been emptied by a large warm-water enema and the patient having been anaesthetised by chloroform, the lateral cutting operation for removal of the stone was performed. The perinæum was deep and gave rise to a little difficulty in the detection of the groove of the staff. The stone was extracted by forceps. An elastic tube having been introduced into the bladder through the wound the patient was put to bed. The stone was almond shaped having one extremity fractured. The external surface is rough and has the appearance of a phosphatic calculus. On breaking it across the middle by means of a lithotrite, a small hard rough nucleus which resists the

force of the instrument stands out and presents the physical appearances of an exalate of lime formation. The calculus weighed in its broken state 5 wgt. gr. xiv.

September 23rd.—Has done well since the operation; passed urine by the urethra for the first time on the 30th ultimo. Since this date the wound has been gradually contracting and has now completely healed up. Is discharged from hospital.

#### ARR. XXII.—Notes on the Blood Sacrifices of the Hindoos.

(Communicated by Inspector General, I. M. D.)

Woon District. By P. CHAMARETT, Esq., Civil Surgeon, Yeotmahl.

It lies between 19° 40' and 20° 45' North latitude and 77° 28' and 79° 33' East longitude.

It is divided into Yeotmahl, Darwa and Woon talooks. The district consists of plains, plateaux and ranges of hills.

The principal rivers are the Wurda and Paynegunga with their affluents.

The population, 310,426 souls, principally consists of Brahmins, Hindoos, Brinjaras, Gonds and low castes.

The religion of the several castes is the same as prevails elsewhere. All the Hindoos, of every denomination, are worshippers of Mahdeo. The language of the District is Mahratta.

In the Woon talook, Telugu is the vernacular.

At present human blood sacrifice is never practised, but it is said that before the British rule some people used to offer human sacrifice when they knew that in a certain place great treasure was buried. Now-a-days, buffaloes, sheep, goats and fowls, are often sacrificed to several deities, both males and females.

A buffalo is annually sacrificed in every village by the Headman on the Dussera festival to a female deity called "Goadavee." The buffalo is first brought to the headman's house, when he worships him with flowers, &c., he then takes a sword in his hand and strikes it on the muzzle of the animal and allows the blood to fall on the ground to appease, as he thinks, the wrath of the goddess Goadavee. The buffalo is subsequently led to every house in the village, when the owner pays something to the leaders of the animal. In the evening the beast's throat is cut on the south boundary of

the village and a drop of its blood is applied to the forehead of the headman, potail, deshbandia and deshmoors.

Blood sacrifice is never practised among Brahmins.

Hindoos often offer these sacrifices when small-pox, measles and other diseases prevail. People often go out of the village where, at a distance under some tree, there are a few stones covered with "Sindoor" or red lead & "Seetala-davce." There they worship, prepare food for the day, offer it to the deity and partake of some as a *prasat* (favor). These people do not require any priests; they perform the ceremonies themselves.

Earth, fire and water of some sacred rivers are worshipped. Fire is supposed to be the principal deity by Brahmins. When a Brahmin lad is invested with the sacred thread his principal duty is to worship fire; he is ordained to keep it during the whole of his bachelorhood. When he gets married he does the same thing. By others of the Hindoo community fire is worshipped at the Holey festival. It is supposed to be a demoness in whose honor fire is worshipped at this feast.

Trees are worshipped by almost all Hindoos under the pretext that various deities live thereabout. The following are the principal plants and trees; Toolsho, aala, peepul, baniat, oombar, rui &c.

Serpents are worshipped by the Hindoos on the day called Nag or Naggur punchun. It is so named because it is supposed that on that day a husbandman was ploughing his field and in the course of his work he hurt a snake of the best sort; enraged at the insolence of him, the snake destroyed his whole family except one daughter, who was at her husband's house and used to worship snakes. The snake told her what he had done, and said that as the snake is quite satisfied at her kindness, he has saved her and further promised that whosoever worships snakes on that day will be ensured protection against their bites. A serpent called Kali, said to have been slain by Krishna, is also worshipped at this festival. Within the last 25 years a new religion is being introduced in the province by the name of "Kalanki." The professors of this religion do not hesitate to do any thing prohibited by other Hindoos. Further particulars of this new religion will be furnished.

In this District, Brinjars and Gonds abound, the former reside in "Tandas" apart from villages, and the latter resort to forests and ranges of hills. Of late they are much more

docile, much inclined to take service under Europeans, and yield in a considerable degree to the prejudices of the Hindoo.

The Brinjars, as a class, are criminally disposed; all violent crime is traceable to them, and they reside for the most part separate from the other people, in small communities subject to the patriarchal rule of the Naik who is the most influential member of the "Tanda."

The habits of every resident in the Tanda are well known to this man, and without his permission no stranger can join the clan. Female infanticide was at one time considered a characteristic of the Brinjars, but no proof or instance has ever come to notice.

The general report is, that a woman accused of adultery is put to death; this also is without proof.

There are in this district upwards of 300 Tandas, each containing from 10 to 50 families, or 28,395 souls. Although they conform to the Hindoo religion they differ much in social position. They rarely mix with the population, are bold and fond of sport, no festival, birth, marriage or death can take place without excessive indulgence in "Daroo and Tumbakoo," and their daughters are not married until they arrive to years of puberty.

There are two distinct tribes, *Mahtoorics* and *Charruns*, also *Dh...* or mendicants; the latter observe circumcision: it is supposed that the Brinjars came into the Deccan as soldiers during the Mahomedan invasion. Their origin known, they appear to have more resemblance to the latter than to any other nation, and in this District become the objects of suspicion to the Police.

They differ very little in their costume from other Hindoos, the dress of the women is entirely different, ornaments of ivory and pewter to their extremities, embroidered skirts and jackets; they are active, great hardship and fatigue.

*Mahtoorics* were Brahmins who are said to have come into the Deccan as grain-carriers with Aurangzeb during the Deccan invasion. They wear the sacred thread, eat no animal food and drink no spirits. Should a man die after the investiture of the sacred thread, and the woman die, cremation is observed. All others are

*Charruns* or Graziers have principally their origin, I, from the *Rhattors* of Joadpoor and came into the

Deccan with Asaph in January 1630 during his predatory incursion.

The *Dharves* were Hindoos of old; they are said to be the descendants of one Nholanur, but their proper origin is disputed; they worship the Deo Sarasatta Gajoo, and Gandha. They generally offer a he-goat as sacrifice. Many of the Dharries observe implicitly the Mahomedan persuasion and offer sacrifices to Peers and solicit Cazees and Fakeers to read prayers during the ceremonial rites of marriages, births and deaths. Among the Brinjaries, polygamy is permitted. Widowers and widows are permitted to re-marry.

The following is a history of the Gond's Province, being a translation of a chronicle compiled by the Sur Mookadam of Woon, named Neelkunt Lutchmun:—

"In ancient times the province was recognized by the name of 'Zadeep-rant' or the country covered with forests, and about 300 Fuslee was governed by the Manays. Afterwards the Gonds became powerful, conquered the Manays and ruled the country for 800 years; hence it was called Gondwana or the Gond's forests, and by this name it is still known."

This country is very large and covered with dense forests. Its boundaries are on the North Chinlwada, Bhundara and Oodsa Provinces; on the South, Badrachbi Godavery river; on the East, Ootkul or Wnauth's province; on the West, the boundary goes from Ootnoor by the hills of Makalan thence by the villages of Sindkeid, Sayat Kalamb to Mooltap.

The inhabitants of the country were in a bad condition until the Bhoslays' conquest, under which they proved and remained in the same state until the country by the British.

The history of the Gond Kings embraces from the commencement of the 4th Fuslee century to the 300 Fuslee, the Gonds became powerful in the country. They conquered the Manays and established the power at Shirpoor in Joorgaum Pergana. When they built a fort on the hill of Manick since called which is still in existence.

One Balalsha assumed the throne and built a city to the east of the Wurda and Pynegunga rivers at a place called Bahalpoor and made it the Government.

There was another Balalsha surnamed Khand Kya from his body being covered with leprosy: to be relieved of this disease he used much medicine with ill effect. One day he went hunting in the jungles and becoming very thirsty, his servants, after a long search, found a small spring of water with which they filled a drinking vessel and presented it to the king. He, according to custom washed his face and drank it. Next morning, when he rose from his bed, he found that the eruptions on the face had disappeared. The queen was much astonished and enquired into the matter; she was informed of what had happened. The king and queen proceeded to the spot, and the former, after bathing in the pool, was cured of his complaint. The place where the water was found was called Aethunath, or the immovable god. The king erected a temple over this pool and began to build a fort which was completed by his grandson. This town was previously inhabited by king Chundrasawmy and afterwards deserted, and was named Chundrapoor after the former king. It is situated between the Wurda and Surputta rivers; it has four gates, three windows and fifty-two bastions.

The Gonds are African featured, black woolly hair, prominent cheek bones, flat nose, thick lips and large ears; they are scantily attired. The females are fond of ornaments. Although very intemperate in their habits, they are hard-working, candid and simple-minded, and as a body not criminally disposed.

Pen, Kodai, Bharsan, Saralk, Mingal, Durga, Passipen, Chundapen.

Some Gonds worship seven gods or deos; others, six, five, and four. Their principal god is Deo or Bhiumpen or Bhemsan.

Gondi, Gaze, Katiak, Naikunde, Madh, Maasi, Maria, Kuri, Bafan, Parja, Koolan, Pardhan.

There are 12 classes of Gonds, they eat with each other but do not intermarry.

About Jonsoon time they perform a great ceremony before sowing; they have also rejoicing and ceremony after reaping. Their ceremonies consist of putting up stones under sheds or trees, besmeared with sindoor or red lead, and offer sacrifices of cereals, ghee, goor, fowls, sheep, goats &c.; but in deference to the Kunbees and Hindoos they do not slaughter cows or bulls, although their caste

and religion permit such sacrifice. Their rites are performed under moah, teak, roey, barhulda, saj, mango and ain trees. They also worship snakes like Hindoos. They sometimes burn, and at other times bury their dead, and at that spot they erect a Chabootra, have wooden posts in the four corners and a stone in the centre line, smeared with red lead.

The Koolams reside in about 12 villages along the banks of the Wurda. Their principal deity is Bhassen. They marry when young and have only one wife. They eat bulls, cows and buffaloes. Their dialect differs from the Gonds, they use many Telugu and Tamil words. A vocabulary of words was furnished in 1869.

The Purdams are an inferior class of Gonds and generally perform the menial works of the village; they worship several of the Gond idols. The higher Purdhams are priests, Bhats, Poojaries &c., to the Gonds, and the lower Purdhams act as musicians.

*Booldanah District.* By A. R. MENASSE, Esq., Civil Surgeon, Booldana.

Who are the "Karhada" Brahmins? Karhada Brahmins are the "Konknust" brahmins, aborigines from Konkun, that part

of the Bombay Presidency which lies to the south of Bantay, below the Ghats, containing the talooks of Kutnagherry, Bankote, Rajapore &c. They are brahmins of the same caste as other brahmins, being considered to be equally holy, and possessing equal rights of saying Vedas as the "Chitpavan," "Devarshee" and "Deshastha" brahmins, but they have no marriage relationship with each other. The appellation "Karhada" is derived from their having been reputed to offer human sacrifice to their deity—sacrifice of any brahmin and particularly of their son-in-law if they can. These rites (of sacrifice) are of course not performed openly but very secretly, and, therefore, a brahmin is generally afraid of going to dine at a "karhada" brahmin's table if invited. These sacrifices are offered with the view of propitiating the deity, and to obtain therefrom wealth or longevity to the family. No other motive leads these cruel votaries to sacrifice what is the best and noblest work of GOD'S creation, viz., a human being.

The manner of sacrificing is differently given by different

sources. The common one resorted to is the secret poisoning the intended victim at a feast, and thus he made to pay for it with his life.

What is Mân Pân? The words mean Mân, respect, and Pân, betul (a leaf). Mân is an inherited right of Patel, Koolkurnee, Pând, Deshpandê, Surdêshpandê, Deshmook &c., of the village. When a marriage ceremony is to take place, they are given places in their meeting and betul-nut in order of their rank, and are asked to begin the ceremony. Mân Pân practically means ceremonial respect. This term passes to certain prerogatives possessed or inherited by certain classes of the community; for instance, a Patel of a village has the Mân of receiving first of all "Pân Sooparree" on a wedding ceremony in his village. He has also the Mân of leading his bullocks first, and to the fore of all others on the annual bullock festival. He has besides the Mân of being invited to any extraordinary occasion or meeting in his village. In the like manner a King, a Patel, a Nawab or a Deshmook may have his Mân Pân.

The word Pân is also the concomitant of the word Mân and is commonly used when expressing or asserting the prerogative. The meaning of it singly is merely leaf (pân) and is universally known.

*Bassim District.* By J. VITAL, Esq., Civil Surgeon, Bassim.

#### 1.—Name of the blood sacrifice.

Excepting Brahmins, all other castes called Hindoos offer blood sacrifice. Human sacrifice is out of practice. The animals offered are buffalo, goat, ram, ewe, cock, hen, chicken. The sacrifice performed by Brahmins is called Yaduya or Yag, and that of the lower castes' offerings are called Bâli.

#### 2.—Deity, male or female, to whom sacrificed.

The deity to whom the Brahmins sacrifice is nothing but fire. The deities of other castes are;—male deities viz., Khundoba, Byroba, Mussoba, Bheeroba; the female, Bhownee, Kalida, Dhorga, Murreematha.

#### 3.—Form of deity.

Khundoba, and Bhyroba are forms resembling human shape with four hands. The form of Bhowanee, Khalida,

and Dhoorga, resemble the human female having four hands, the last (Dhoorga) having eight hands. Mussoba and Bheeroba are one mass of stone, besmeared with red lead; that of Murceematha is that of one mass of unshaped stone and is most feared by all the Hindoos and Mleers. The form of Kali Devi, is said to be very beautiful, — a majestic inspiring female form with a crown on her head, with eight arms and hands, mounted on a lion, and is represented in the act of killing a demon, Mahishasur, who fought in the shape of a buffalo. When the head of that animal was cut off, he proceeded from out of its body, in his own form. The picture of the Devithus, represents the demon with its form, above the waist. Often, this is only met with the head of the Deviput, in temples, and again in others a shapeless stone besmeared with red lead. The form of Khundoba is a well-shaped and well-dressed man, with a crown on, seated on a horse, and often with two of his wives near him. Asras, goddess of woods, Sutwai, goddess of children and recently confined women, both these have female forms, and are invariably represented by stones, besmeared with sendoor; they are temporarily put up for the occasion; for instance, a confined woman with her infant goes out of her house, collects a few stones, besmears them with sendoor, worships them and returns home, after which the stones are left there, unnoticed, and unworshipped by others.

4.—*On what occasion is the sacrifice?*

The day for sacrificing is not fixed. The Yag, or day of sacrificing is not a fixed one but the process lasts for about ten days. The lower castes have set days for the purpose, and vary in different places, but most of them have their sacrifices on Dussara festival, and some on the day on which they have vowed. Some again on the occasion of marriages, childbirths, recovery from sickness, deliverance from some calamity and pacification of the gods in time of epidemics.

5.—*What living creatures are sacrificed.*

As already stated, goats, buffalo, ram, ewe, cock, hen, chicken. Human sacrifice has been practised in ancient times, but is now prohibited.

6.—*Detail the customs and processes of the sacrifice.*

The Brahmins sacrifice by expressing a few words, Mantras in Vedas. Some are annual sacrifices on particular days, others offer in liquidation of vows made to deities. The process of sacrificing is, that the party proceeds to the temple

of the deity with flowers, sandalwood and incense, and after performing their prayer or poojah, the animal offered is now laid on the floor before the deity, and then, by a Mahomedan Moola (priest) a knife is thrust into its throat. Some thrust the living creatures into a blazing fire, as offering. The animal is then killed, and laid before the deity for a time. Sometimes a few drops of blood are sprinkled on the deity and then the offered animal is cooked. Other things, as rice, wheat cakes, &c., are also prepared, and when everything is ready, a little of each is put before the deity. The assembled people then feast on the remainder; the lower class of people worship the animal to be sacrificed and kill it according to their "Mân Pân."

7.—*Who are the worshipping sacrificing people, and who are the sacrificing priests?*

"Yaduga" is performed by Brahmins, and this being very expensive, so much so, to the extent of 5,000 Rupees, it is only performed by wealthy people. "Agnhotries" are the sacrificing priests. Hindoos are the worshipping and sacrificing people. The Mahomedans offer their sacrifice to their "peers" and the tombs. The priests for the animal offerings amongst Hindoos are generally Hindoos; for the Mahomedans, Moolas. When animal sacrifice is concerned, Brahmins will never act as priests.

8.—*What are the names of the various gods of the people's race and tribes near you.*

The Hindoo gods are said to be 33 millions. The deities generally known are Ram, Kistna, Govind, Gopaul, Mahadeo, Vishnoo, Marolee, Kundoba, Bhyroba, Bhowanee, Musoba, &c. &c., Brahmins adore Ram, Vishnoo, Govind, Gopaul, Mahadeo, Marotee, Gunputee. The unlearned pay their homage to the numerous deities.

9.—*Are spirits worshipped, and if so, whose spirits?*

Ignorant people chiefly "Soodras" believe in spirits; they worship and offer sacrifices to the spirits of dead men. Some say, no spirits are worshipped, but offerings are made to some evil ones. "Sanyashis," tombs of holy men (Peers) are worshipped by all Mahomedans.

10.—*Are any of the elements worshipped, and if so, which of them, and by what race, or tribe, or people?*

Five elements (sun or fire, earth, water, air, and sky) are worshipped by all classes of Hindoos and Koonbees; the sun is worshipped the most as he is considered the visible

representative of God. The Parsee race particularly adore and pay their homage to the sun or fire.

11.—*Are trees worshipped, and if so, which of them, and by what race, or tribe, or people?*

Eight trees are the principal ones worshipped by all classes and tribes of Hindoos and Dhairs, 1, Toolas or Thoolsee; 2, Bel; 3, Peepul; 4, Bud; 5, Awali; 6, Oomber; 7, Shami; 8, Apta. The first two of these were unanimously considered in former times as the holiest of the whole, and are still sworn on either; the two last (Shami and Apta) are worshipped on Dussera day. Some say the first four are daily worshipped, the other four, on some particular days.

12.—*Are serpents worshipped, and if so, which of them, and by what race, or tribe, or people?*

Cobra-de-capello, or Naag, worshipped by all classes of Hindoos, and even, by some of the low caste people. The 5th day of "Shravun" their 5th month is the day of worshipping, and is called "Naag-Punehme." On the day of festival, the people pay their homage, and the Naags are held in the highest estimation, and fed with milk.

13.—*Have any new deities or religion been recently introduced in the locality, and if so, describe?*

No new deities or new religion have been introduced in the district.

14.—*What is the name of the chief deity in the district, its form, by whom worshipped, and is it a pilgrim shrine?*

In the town of Bassim, there is one principal deity called Ballajee formed of one mass of stone, besmeared with sendoor, resembling a human shaped man. All Brahmins, Hindoos and the lower class of people worship it, but it is not a pilgrim shrine; only a fair is held once a year, for three days. At a village about twelve miles from this station called "Nag-gurdoss" there is a pilgrim shrine. To this place people from different parts, both pilgrims and traders, resort biennially. The festival takes place in commemoration of three goddesses; 1 Yeasari; 2, Toojapori's mother; 3, Mullapore's mother. The fair lasts for 22 days, the attendance from first to last is said to amount to 141,084. The value of property such as copper, brass, cloths and other articles of various kinds brought and sold there amounts to Rs. 271,910. Also at Mungloorpeer, a town in the district about 24 miles from this, is seen a Mahomedan tomb or "peer" to which place all sorts of people attend and have a fair during the month of October yearly. It is a pilgrim shrine.

Blood sacrifices of human beings occurred till recently, amongst the Konds, and of buffaloes, bullocks, goats, pigs, kids and lambs, amongst the races of the peninsula of India.

Akola. By ALEXANDER PORTER, M. D., Civil Surgeon, Akola.

1. Name of the blood sacrifice. Goats, buffaloes and lambs.
2. Deity, male or female, to whom sacrificed. In some parts male deity, and in most parts female deity.
3. Form of deity. In the shape of a human being.
4. On what occasion is the sacrifice? On the occasions of cholera and small-pox.
5. What living creatures are sacrificed? Fowls, kids, buffaloes and goats.
6. Detail the customs, and processes of the sacrifices. When a vow is made by a person that a certain sacrifice should be made to a certain deity, he is first bathed and adorned with a yellow colored cloth, having a flower garland on his neck, and after performing the usual ceremonies, incense burning, &c., the sacrifice is offered.
7. Who are the worshipping and sacrificing people and who are the sacrificing priests? Generally the low caste people and the priests are also of the same race.
8. What are the names of the various gods of the people, races, and tribes, near you? Khundoba and Dabee.
9. Are spirits worshipped, and if so, whose spirits? No spirits are worshipped.
10. Are any of the elements worshipped and if so, which of them and by what race, tribe, or people? Elements are worshipped by many classes of people especially the water.

11. Are trees worshipped? Trees are worshipped by Brahmins principally.
12. Are serpents worshipped? Serpents are worshipped by Brahmins principally and many other sects also.
13. Have any new deities or new religion been recently introduced into the locality? If so, describe. No.
14. What is the name of the chief deity in the district, its form, by whom worshipped, and is it a pilgrim shrine? Siva is worshipped by all classes of people, and it is not a pilgrim shrine.

ART. XXIII.—*Medical Report upon the Town and surrounding Villages of Ganjam*, by R. HUFFTON, ESQ., Honorary Assistant Surgeon.

(Communicated by Inspector General, I. M. D.)

The town of Ganjam is situated in latitude  $18^{\circ} 23'$  north and east longitude  $85^{\circ} 6'$ . It is seated near the right or east bank of the Ruskhoola or Ganjam river on a rising portion of a low flat plain which extends for miles from east to west, and is bounded on the north by a number of high hills, a few miles distant. The plain consists principally of paddy land, except on its eastern face near the sea where it is sandy, and the whole of it is cultivated almost to the doors of the houses when there is sufficient water for the purpose. Its gross annual revenue is about Rupees 15,000.

The average elevation of the town is from 5 to 8, 9 and 10 feet above mean sea-level, and nowhere does it appear so high as the trunk road which passes through it. During the prevalence of the south-west and north-east monsoons the lowest portions of the town are inundated; and, as there are no drains to carry off surplus water, it is only removed by evaporation when the rains are over.

RIVER.—The river follows an easterly direction towards the coast north of the plain, and crosses the trunk road leading to Ganjam about a mile west of the town, where it is nearly half a mile broad, and falls into the sea

on its southern side. It is fordable at all times except during the freshets, when crossing must be done in boats. During high tide adults and empty carts can cross. At all other times the bed of the river for a few miles is partially covered with sea-water for some portion of the twenty-four hours daily. In its course the river nearly encircles one-half of the place, and emanations of a noxious character from its surface bed must add to the insalubrity of the town.

Numerous tanks and pools filled with decaying herbage and other decomposing matter dot the plain, principally in and around the town, from which noxious gases are constantly passing into the air, and the water from these places is used by the people for almost every purpose.

JUNGLE.—There is now a good deal of exuberant vegetation in several parts, especially about the dwellings of the inhabitants, and the remains of former gardens and compounds; the growth of the last two years, which in some measure prevents free ventilation, but the danger to health from this source is now much less than it was. Some few years ago a severe outbreak of fever raged in the station, and subsequently the Department of Public Works were engaged for some months in cutting down the jungle and otherwise cleaning the town.

SOIL.—The soil in and around Ganjam is alluvial, except near the sea where it is sandy. It is a dark tenacious loam containing apparently iron. This stratum of tenacious loamy soil, I am informed, is generally from 12 to 15 feet in thickness, except near the sea and banks of the river where it is less, and immediately underlying it soil of a more porous character is met with, in which probably moisture from above would readily percolate if the land was placed under a system of sub-soil drainage. At my suggestion several pits were dug in the fields in various parts on the outskirts of the town, each pit from 6 to 8 feet in depth, and on my last visit to Ganjam I examined the earth taken from the bottom of these pits, but found it to be the same in character as that on the surface.

WATER SUPPLY.—Ganjam and surrounding villages are divided into four parts, and in describing the sources of water supply each will have to be taken in detail.

The town of Ganjam and adjacent villages, Borapilly and Pointhela, form one division; they occupy a central position near the trunk road, and the water supply to this part is furnished by tanks, wells, and pools. The water obtained from these sources for drinking, cooking, &c., cannot be worse. For the most part it is supplied from the filthy tanks before mentioned into which the drainage of the town is chiefly received with all the sewage it may carry with it, or the water is got from wells into which fluid of this nature percolates. In the account given by the Curnam there are in all twenty-nine wells, exclusive of numerous tanks, pools and hollows, which are generally filled to overflowing during the rainy season; many of these pools and hollows dry up in the hot weather, while others, the far greater portion, contain a filthy, slimy greenish fluid which is used for cooking and ablution purposes; a few of the better kind are used for drinking after straining the water. I looked at the water from a number of these tanks and, with the exception of three or four, they were all so bad that it is surprising the people used them for any purpose whatever. Of the twenty-nine stone wells eight are used for drinking. Of these three only, situated on the outskirts of the town, are described as really good. Some few of the more wealthy inhabitants, who will pay for the conveyance of it, procure their water from these latter wells. The water of all the other wells is so very brackish, or salty, that they are only used for bathing, and occasionally for cooking. These wells are mostly situated in the centre of those streets where the rice and paddy dealers reside, at about 200 yards from each other. These streets during the day are nearly covered by wet rice boiled in the husk, placed there for drying alongside of cattle ordure, in all stages of moisture, laid out in the sun for the same purpose. This practice probably has existed for many years. It is, therefore, not surprising that the water from these wells is so bad when it is considered that organic matter is constantly passing into them through the earth by percolation derived from the wet substances placed upon it daily. The inhabitants of this part of the town are very subject to fever. The residents in the adjoining villages of Borapilly and Pointhela suffer from this complaint in a less degree, and, in my humble opinion, the cause is to be looked for in the quality of the water they use, which is far more pure than that in the town.

The 2nd Division comprises Pedda-Kunchipoorum, Chinna-

Kunchipoorum, and Dolzepettah. These places are situated in the north-west of the plain near the bank of the river and so low as to be only 1 foot and 6 inches above mean sea-level. The residents generally are agriculturists, fishermen, and lime-burners. There is no conservancy, and the streets are in that condition seen in Indian villages not under municipal control. Drainage there is none except into the river when the place is sufficiently flooded for that purpose. There are no tanks except a few hollows which quickly dry up in hot weather. There are a few wells; the water of some I tasted, and found it good. The people generally use water from the river for drinking purposes. At the time of my visit I saw only two cases of fever. The number of sick is the smallest in Tabular Statement No. 1.

The 3rd Division is Dindarapoorum. This is a village of ordinary size, situated to the south-west of the town of Ganjam on the river bank. The inhabitants are principally boatmen and fishermen. The conservancy is no better than those previously mentioned, but here, as in the town of Ganjam, the street in several places was covered with wet paddy and cowdung drying in the sun. The people drink river water for four months in the year during the freshets, at other times from wells in the vicinity, owing to the water of the river being salty. They are not so healthy as the people in Kunchipoorum. A few cases of enlarged spleen were observed in this village, and the number of sick is much greater than in the former place.

Several scattered hamlets, some of them rather far apart, constitute the 4th Division called Pullibunda. They are situated on the north-east of Ganjam. The number of sick is almost double that of the last-mentioned village—see Table of sick. The conservancy of these places is like all the others. The residents are generally boatmen, coolies, and dealers in salt. Their water is procured chiefly from wells. I found the water from several of them brackish, probably from proximity to the salt-pans. Not a single case of fever showed itself when I passed through. I only went through three of them. The wells were generally situated on elevated spots where sewage could not get to them. There were a few hollows which contained pretty clear water.

**DRAINAGE.**—There is none except from the higher to the lower parts of the town caused by the natural configuration

of the ground where it lodges in numerous hollows in different parts and remains there until it dries up by evaporation. The old masonry tunnels of former times exist, but no drains or channels to carry off water.

During a portion of the year 1868-69 the Department of Public Works were engaged in removing the jungle and overgrown herbage in and around Ganjam, and a system of efficient drainage appears to have been commenced in the cutting of channels for letting off superfluous water on the north of the town, filling up filthy stagnant tanks and pools, repairing tunnels, &c., but the work was suddenly put a stop to by the Supreme Government at the period when all other public works in course of erection were suspended. Since that time the work has not been recommenced, although only a moiety of the sum set apart for it was used.

It appears to me that the severity and prevalence of the fever in Ganjam, during the period I have been in medical charge of Chettpore, has not been so great as it was prior to the removal of the jungle, &c., by the Department of Public Works before mentioned, and I attribute this change for the better (however small) to the measures then instituted, but only very partially carried out.

**CONSERVANCY.**—There is no conservancy of any kind in operation. The refuse and sweepings of houses and stalls lie about in every direction near the dwellings of the people, and excepting the trunk road and a few others the streets in many places are covered by the people with cattle ordure in every stage of moisture, from the hard brattio to the semi-fluid cowdung which when sufficiently dry is used for fuel. The smell from this cause, coupled with that from rice boiled in the husk, spread on mats in close proximity with the other, contaminate the air so much as to sicken persons exposed to its influence who are unaccustomed to it.

There are no latrines, nor scavenger establishment in the place, the people make use of holes in their yards, or the nearest hedge or cover that may be convenient for the purpose.

**HISTORY.**—Previous to the year 1815, Ganjam was the head quarters of the district and the principal residence of a pretty large military force, European and Native, in the Northern Circars. The chief civil authorities of the district with their establishments resided there, and it appears to have been for almost a century previous the most flourishing, populous, maritime town in the Presidency of Madras,

north of Masulipatam. The remains of magnificent buildings and the old ruined fort fully attest its former prosperity, although now it is a place of little note, and consists of the old native town of Ganjam greatly reduced in size, and the other divisions before mentioned.

In 1815, and two succeeding years, a very severe epidemic fever raged in the place, and villages for some miles around, so deadly in its character that many of its victims are said to have been carried off in from twenty-four to forty-eight hours. From the account given of this fever by some now living, it appears to have been an every-day fever, attended with very severe rigor of long duration, succeeded by heat, and after a few days by swellings of the whole body which terminated in death. Others again state that it was a fever of a bilious character marked by congestion of the viscera of the head, chest or belly. This disease is said to have originated from a flooding of the low country, the result of a storm, but none of the natives seem to have remembered it.

It was during the virulence of the epidemic that a general exodus of the Government establishments appears to have taken place, the Military were sent to Berhampore and the Civil to Munsoorectuli (now Gopaulpore) and Chicacole. Since that time, although the place has become much more healthy, it has never regained its former salubrity, and the residents ever since have been exposed to the attacks of an endemic fever, paludal in its character and type, and varying in intensity according to the amount of moisture in the atmosphere, high winds, and insanitary condition of the place.

The native idea is that the fever is dependent upon the bad quality of the water they are obliged to use, and they think that nothing will ameliorate the unhealthy condition of Ganjam until the whole of the inhabitants are furnished with good river water. So imbued are they with this notion that they begged of me to bring this subject prominently to the notice of the authorities, and gave me an urzee for that purpose.

The natives treat the fever by giving decoctions of various roots which act on the bowels, and drinks containing ginger, long pepper, and other spices. The generality of the people have faith in the use of quinine, and readily take it when prescribed for them.

Tabular Statement No. 1, shows that there are more sick

in the divisions of Dandrapooram and Pullibunda, in proportion to their population, than in the other two. This I believe may be accounted for in the fact that the inhabitants of these places are generally of the poorest class of labourers, being chiefly boatmen, fishermen, coolies, and salt-makers, who, from the very nature of their occupation, are exposed to those conditions of temperature and other causes which favour the production of disease, in addition to the circumstance that their dwellings are situated either on the bank of the river, a little above its junction with the sea, or along the edge of extensive salt-pans.

The endemic fever of Ganjam, in my humble opinion, is in character that of all paludal fevers in most parts of the world where the nature of the soil, heat, and moisture combined are sufficient to bring about that condition which is the cause of them. In the present case I believe the increase of it in Ganjam is chiefly due to the cessation of the south-west and complete failure of the north-east monsoon, the action of the sun causing rapid evaporation of moisture from the earth's surface, and thus setting free those malarious germs which are the efficient cause of the disease.

I would here also bring to notice that many of the cases in the tabular statement are those of persons who have had fever repeatedly before, and whose constitutions have in a manner become saturated with malaria; and although cured for the time, yet the slightest change in the direction and force of the winds, or in the condition of the atmosphere, is sufficient to produce in them a recurrence of the complaint.

The rainfall during the months of August, September, and October this year has been very much less than for the corresponding period in the previous year, as shown in Table No. 2, and this circumstance, in all probability, has influenced in some degree the increase of fever, owing to the water used by the people holding in a more concentrated form those deleterious substances which when taken into the body predispose to disease.

The salt-pans situated on the north-east of the plain near Ganjam appear to be a fruitful source for the development of the disease. More cases of the Police stationed there are brought to Chatterpore for treatment than from any other station in the district.

The type of fever chiefly prevailing is the tertian, although there are many cases of quotidian and quartan fever. In those complicated with enlarged spleen I found

that they had suffered from the tertian type chiefly, and were otherwise weakly and anemic.

According to the statements given by a few of the natives of the place, it appears that sometimes, as in other places, a few of the cases of the intermittent type after a time take on the remittent form, attended occasionally with head symptoms, from which the person seldom recovers.

For the past two years supplies of quinine have been furnished to the Collector from Madras for the use of the inhabitants of the district on payment, but nothing specially for the sick in the town &c., of Ganjam. It is in contemplation to institute sanitary measures for the improvement of the health of the people of the district, and the sum of Rupees 1,000 has been passed in the Budget for that purpose during the coming year. I am informed that the Local Board have discretionary power to devote that sum or any part of it to the improvement of such localities as in their judgment may require it most.

The fever generally is quite amenable to proper treatment. A purge and subsequently a few large doses of quinine or quinine, arsenic and bark, given early, almost always suffice to dissipate it for the time; but it is very apt to recur when the person is exposed to a continuance of the causes which produce it. In such cases spleen complications frequently take place, and occasionally Bariberi supervenes, or it passes into the remittent form, when it becomes dangerous. The continued use of quinine combined with iron is very effective in preventing relapses.

TABULAR STATEMENT No. 1. showing the amount of population, number of cases of fever, and proportion of sick

*Dengue at Trichinopoly.*

| Name of locality. | Amount of population in each division. | No. of sick in each division. | Proportion of sick to strength of population in each division. |
|-------------------|----------------------------------------|-------------------------------|----------------------------------------------------------------|
| Town of Ganjam.   | 4,381                                  | 221                           | 1 in 194                                                       |
| Kunchipoorum ...  | 809                                    | 7                             | 1 in 1154                                                      |
| Dundarapoorum..   | 796                                    | 53                            | 1 in 15                                                        |
| Pullibunda.....   | 1,054                                  | 87                            | 1 in 1216                                                      |
| Total...          | 6,940                                  | 368                           | 1 in 184                                                       |

TABLE No. 2. showing the rainfall in Ganjam during the undermentioned months for the years 1870-71.

| Months.     | 1870.   |        | 1871.   |        | Remarks.                                         |
|-------------|---------|--------|---------|--------|--------------------------------------------------|
|             | Inches. | Cents. | Inches. | Cents. |                                                  |
| August ...  | 5       | 2      | 3       | 5      | Norain has fallen<br>in the month<br>of November |
| September.  | 12      | 55     | 6       | ...    |                                                  |
| October ... | 10      | 9      | ...     | 75     |                                                  |
| Total...    | 27      | 66     | 9       | 80     |                                                  |

ART. XXIV.—Return of Admission and Deaths from  
Dengue at Trichinopoly at October 14th 1872.

(Communicated by Inspector General I. M. D.)

| Regiment.        | Period of prevalence.    | #  | Combatants.      |                 | Recruit and ten-<br>ant. Boys. | Europeans.    |                |                | Camp Followers. |        |                | Civil Population. |        |                | Total. |    |       |       |    |
|------------------|--------------------------|----|------------------|-----------------|--------------------------------|---------------|----------------|----------------|-----------------|--------|----------------|-------------------|--------|----------------|--------|----|-------|-------|----|
|                  |                          |    | Native Officers. | Blanketed File. |                                | Off-<br>cers. | Infan-<br>try. | Chil-<br>dren. | Men.            | Women. | Chil-<br>dren. | Men.              | Women. | Chil-<br>dren. |        |    |       |       |    |
| 25th Regt. N. I. | 12th Aug. to 16th Oct.   | 16 | 338              | 620             | 72                             | 33            | 8              | 5              | 1               | 5      | 110            | 13                | 714    | 155            | 29     | 1  | 2,446 | 1,179 | 5  |
| 26th " " "       | 16th Aug. to 16th Oct.   | 16 | 532              | 320             | 1                              | 47            | 56             | 2              | 1               | 2      | 140            | 1                 | 303    | 167            | 2      | 8  | 2,505 | 1,012 | 12 |
| 27th " " "       | 16th Aug. to 13 Oct.     | 9  | 409              | 346             | 93                             | 23            | 6              | 2              | 6               | 5      | 45             | 14                | 353    | 7              | 12     | 1  | 1,316 | 473   | 1  |
| 50th Hospital    | 17th Aug. to 17th Sept.  | 15 | ..               | ..              | ..                             | ..            | ..             | ..             | ..              | ..     | ..             | ..                | ..     | ..             | ..     | .. | ..    | 1,003 | 1  |
| 60th Hospital    | Aug. to 12th Oct., 1872. | 1  | ..               | ..              | ..                             | ..            | ..             | ..             | ..              | ..     | ..             | ..                | ..     | ..             | ..     | .. | ..    | 160   | 1  |
| Total.           |                          | 45 | 1,367            | 1,443           | 2                              | 173           | 13             | 14             | 13              | 5      | 337            | 22                | 1,451  | 173            | 23     | 11 | 5,156 | 4,521 | 17 |

S. WYBLET STREET,  
LONDON, E.C. 6.

For all General Hospitals.

Library.

g. Dysentery following Diarrhea.  
h. Convulsions.  
One Lady had two Children were

Native Regiment, including Camp Followers.

| Admissions. | Deaths. |
|-------------|---------|
| 1,084       | 2       |

| NAME OF FIRST NAME. | DATE OF BIRTH. | EMERGED. | ATTENDANCE. | DEATH. |
|---------------------|----------------|----------|-------------|--------|
| 14th August 1872.   | 14th Oct.      | 6. 1875. | 2. 85.      | 15     |

## OURSELVES.

With scanty encouragement (and some positive and unanticipated discouragement) we have arrived near the completion of our sixth Volume, marking three years from the beginning of our undertaking. It rests now with the Medical Profession in this Presidency to decide whether the Journal shall continue to be issued or shall cease with its December number. We cannot go on devoting time and labor--valuable, at least to ourselves--to a task which either the apathy of our Medical brethren or our own incapacity prevents from being so useful as we expected when we began. Our regular contributors (to whom we take this opportunity of returning our warmest thanks) may be counted on the fingers; our contributors, regular and casual together, would not need more than the digits of the upper and lower extremities for enumeration. We were careful not to expect pecuniary advantages from our work, by which sage precaution we have evaded disappointment, but we confess we should like to number as subscribers more than 38 per cent. of Local Medical Officers, 17 per cent. of the British Service, 11 per cent. of the Apothecary grade and 2 per cent. of the Hospital Assistants. These figures represent the encouragement we receive from the ranks of our profession.

We are quite willing to admit, as we have intimated above, that possibly our failure to meet with the degree of appreciation which we expected is due to our own deficiencies--that our success may have been equal, perhaps even superior, to our desert. This alternative hypothesis, however, if accepted, can in no wise alter the practical conclusion.

Whether our comparative ill-success in meeting with support from our brethren is due to their apathy or our incapacity we are equally unable to continue our experiment without a larger measure of encouragement than we now receive. If the fault be our own, we have at least done our best--"angels can no more."

## CLERICAL DOCTORS.

We have here lying before us a copy of the "Jamaica Church Chronicle" of the 17th June; in which we read with great interest an article entitled "plea for a Medical Priesthood". The writer earnestly pleads for a combination of the two professions "Divinity and Medicine" as often as it is practicable, and regrets that it was not recommended and expressly sanctioned by the Church in her Canons.

That such a combination would be, as it has been in isolated cases, of great benefit to the Colonial Churches, nobody ever would or could doubt; but the question is how far it would be advisable to carry out what the writer of this article principally advocates, viz.--that a Medical man after he has taken holy orders should support himself entirely by his Medical profession and not be in any way a burden to the Church.

What does Scripture say to this.--Christ went about healing the sick in body and soul. But then Christ took no fees whatsoever. St. Paul during his ministry supported himself by his trade of tent-making; but this means of support is not one which would bring him in such close and frequent contact with his Christians of the various Churches; as the Medical profession would a clergyman who was in charge of a parish.

as he had received the message, the poor sufferer had passed away, and was beyond the power of human comfort and consolation. But such cases would *not* happen if a resident medical man had been admitted to Holy Orders. He would be there day and night not only to relieve the bodily ailments but also to attend to the spiritual wants of his patients. Is such a plan impracticable in the General Hospital?

We have here given but a very cursory view of the subject, which is a very interesting one. Our time and space do not allow us to enlarge on it at present, but we shall be glad to publish suggestions on the matter and thus to have it thoroughly discussed.

### CHLOROFORM AND MORPHIA COMBINED.

In the early part of this year, M. Claude Bernard brought forward at a meeting of the Institute a paper on this subject, written by a pupil of his, M. Guibert. In experiments which the latter had conducted it was found that when a patient under the influence of morphia was subjected to the action of chloroform in the ordinary way two distinct conditions were procurable, *analgesia* and *anæsthesia*. When chloroform was administered after the hypodermic injection of one to two centigrams of hydrochlorate of morphia, a state of analgesia was first produced, in which consciousness and power of voluntary movement were preserved; and which is suited to the performance of minor surgical operations and to labor cases, inasmuch as sensibility to pain is notably lessened. A more prolonged and uninterrupted inhalation gives sleep with anæsthesia and muscular relaxation, a condition suitable to the performance of

capital operations and termed by Bernard *mixed anæsthesia*.

The state of analgesia had not been previously described or tested therapeutically. The author made about thirty observations, half the cases being obstetric, and came to the conclusion that the condition was likely to prove of great value in laborious labors, in operations unattended by lesions of the nervous trunks and in the treatment of certain very painful affections, as lead colic or hepatic or nephritic colic. The dose of morphia varied from one to two centigrams; that of chloroform is not so easily specified, owing to loss by evaporation. The latter, however, must be relatively small as it was found that the analgetic state could be maintained for several hours, in severe cases of lead colic, by simply inhaling the chloroform at intervals from an unstoppered phial. It was to cases of laborious labor that analgesia seemed likely to become most applicable in practice. It diminishes the suffering very decidedly and it may be kept up for several hours without injury to mother or child, without interfering with regular uterine action or predisposing to post-partum hæmorrhage. The following is the procedure followed. About a centigram of hydrochlorate of morphia is injected beneath the skin of the forearm, when the pains are becoming difficult to bear and signs of agitation, anxiety and despondency are appearing. A quarter of an hour after the injection chloroform inhalation is commenced in the ordinary way, at the beginning of a pain. After ten inspirations of air mingled with chloroform vapor the patient feels the suffering attendant on the uterine contraction diminishing, while the uterine action remains unimpaired. The inhalation is then discontinued and resumed at the onset of each pain to the termination of the labor. When the head is pressing on the perineum and the analgesia becomes less pronounced

there need be no hesitation about injecting centigram of morphia. After this treatment is much less of the fatigue which usually difficult labor.

In one case the author performed ven more than sixteen hours after the escape of waters, with the greatest ease, the state of analge having been induced; the mother remaining capable of answering questions but not uttering cry or complaint. The combined action of the morphia and the chloroform had completely obviated that retraction of the uterus which renders the operation so difficult to the accoucheur and so painful to the patient. The condition can easily be maintained without passing into anaesthesia if the inhalations are sufficiently often interrupted.

#### IRISH MEDICAL BENEVOLENT FUND.

We have received the Thirtieth Annual Report of this most deserving Society and we are glad to find not only that its means of doing good, though far from being equal to its deserts, are increasing year by year, but also that contributions from the Indian Branches are growing annually more considerable. During the year 1871-72 £841-10-6 was expended in grants to medical men incapacitated for work by age or illness or to help the widows and orphans of brethren who died and left their families destitute or imperfectly provided for. Nine medical men were amongst the applicants for grants, sixty widows and sixteen orphans.

The Bombay Branch, the first organized in India, remitted over £79 during the past year. The newly formed Bengal Branch sent more than £41. Madras contributed Rs. 420, but less than might have been expected of her. Out of 50 members of the local

service from whom help might reasonably have been hoped for, we can count but 16 names in the Report and the sister service is still more inefficiently represented. We hope that the thirty-first Report will show signs of more active sympathy among Irish medical officers in Madras with a Society which has so high a claim to their support.

Dr. P. G. Fitzgerald, Madras, will be glad to receive contributions from Indian officers and E. A. Gibbon, Esq. R. A., Ramandroog, continues to act as Joint Secretary in this Presidency for the British Medical Service.

## REVIEW.

*Report of the Sanitary Commissioner for Madras for 1871.*

This work of the Sanitary Commissioner represents a vast amount of well bestowed labour. The subjects treated of are numerous and varied. The volume is a large one; but it would be difficult to suggest curtailment without loss. It has been affirmed more than once that the office of Sanitary Commissioner is quite unnecessary, a needless expense, that he only does work which is or ought to be done by the Deputy Inspector Generals. This we very much doubt. These officers lead a very busy life, and have no time to do most of the work of the Sanitary Commissioner.

The first subject noticed is the sickness and mortality among British troops. The mean annual strength was 10,800, the total number of sicknesses 12,781, the average daily sick 61, and the number of deaths 225. These figures give 1 in 1,000 admissions, 57.12 per 1,000 daily sick, and 1 in 1,000 deaths. They are much about the average of the last ten years. Cholera was generally absent during the year from all stations except Secunderabad, where a sudden outbreak attacked 71 out of 360 of Her Majesty's 18th Hussars in three days, carrying off 33 of them. "Typhoid fever was imported from Ireland" into Cannanore and Calicut. With reference to this disease our author is of opinion that "it is not an indigenous disease of India: If the natives suffer from it at all we have no conclusive evidence of the fact. But you know that European extraction are prone to suffer, more in some years than in others, and of late years just as the transportation of troops and passengers from England has increased so has typhoid fever been commonly observed. In answer to those who think that a high temperature is favourable to congestion of Peyer's patches, he informs us that typhoid is most prevalent in the cool climates of Bangalore, Secunderabad and Wellington, and that too in the cold seasons of the year, and therefore he does not admit that the heat has anything at all to do with the production of Typhoid. It is unfortunately very difficult to

prove the existence of such a disease as this among natives, *post mortem* examinations being so rarely allowed.

The question of age in relation to the British soldiers' mortality in India is entered into very minutely and the conclusion come to is that the Home Government has no statistical authority for deciding against sending soldiers under 20 years of age to India. They have done so on the ground that such soldiers are more liable to disease and early death than those who arrive in India at a more mature age. No statistics showing this, as regards disease, have yet been made out, and the tables of mortality prove that "as regards diseases fatal to life the young soldiers have a pre-eminent advantage over those of maturer years." For example while the number of deaths per 1000 under 20 years of age is 7.4, that between 20 and 25 is 13.7; between 25 and 30—21.6, and so on. There is nothing here but the usual law of increase of mortality according to age. But beside this Mr. Cornish tries to make out that men below 20 do not suffer ultimately in a greater ratio than those coming to India between 20 and 25. This he does indirectly by means of Actuaries' reports on the India Funds. Military Officers come to India under 20 as a rule, while medical men average 24 years on arrival. The reports show that a larger proportion of the latter die between the ages of 25 and 35 than of the former; and Mr. Cornish affirms that "as regards climate &c. the fact that both Medical and Military Officers served in the same Presidency, will be sufficient to show that both classes existed under exactly similar conditions of life." Our opinion is that the Medical Officer in this country runs much greater risks as regards his life than the military officer. The latter rarely dies on the field in these days. The former has constantly to face death in many shapes, in the camp, the hospital and by the bed-side. There is one respect in which we think the soldier is damaged by coming to this country under 20 and that is in his physical development. His life here is a very idle one, on the whole indeed a luxurious one. With the exception of a little parade in the morning and occasionally in the evening he does nothing. During the greater part of the day he lies stretched on his cot, and the consequence must necessarily be that his development comes quickly to a stand. Instead of filling out in bone and muscle to the age of 25 or thereabouts he sticks at 20 in these respects. His usefulness as a soldier must be always less than that of a fully matured man. No

Indian statistics could well show this as the soldier's period of service in the country is so short. If we could follow him home, however, we ought to find him old before his time. We think this is a common result in the case of officers and others who have come young to India. It has been shown that the lives of the married Madras Medical Officers have been very much better than those of the unmarried. Our author ascribes this to "habits of life." May it not rather be due to the fact that the unmarried officers get more knocking about and more dangerous work just because they are unmarried and have no incumbrances? To settle the question of more or less sickness among young soldiers in India, Mr. Cornish has suggested a new form to the Government of India for medical officers to fill up. It would answer the purpose most effectually, but it has not been sanctioned on account of the large number of returns already required of these men.

The number of children with the troops amounted to 2,982. As usual the mortality among them was great and, as usual the deaths were most numerous among children under two years of age, from convulsions, teething, diarrhoea and P. achitis. These "tell a tale of bad or injudicious feeding, of exposure, and of defective clothing."

Effects of venereal disease and the effects of the Contagious Diseases Act are treated very fully. The number of admissions from these diseases is still very large, being 171 for every 1000 strength. This is less than the average of the last five years which was 196 per 1000 and of the fifteen before that—namely 263 per 1000. It is generally stated that the individual cases are much less severe than they used to be, the proportion of indurated sores being much less than formerly. Dr. Cornish thinks however that soft chancres in this country are often followed by constitutional symptoms. On the whole he is satisfied that the Contagious Diseases Regulations have done some good; and one reason why they have not done a great deal more is that there are large classes of native women who practise prostitution whom the Act cannot of at least has not reached. Such are the pagoda and dancing girls, grass-cutters, female coolies employed about barracks and many others. Another reason is that the ordinary Police of the country have every where proved inefficient as detectives in this department. "The law is very laxly administered, and we have no right to look for very marked results while the regulations are allowed to be sys-

tematically evaded." It was thought that prostitutes would rather like periodical examinations with a view to preservation of health. On the contrary they hate them and avoid them as much as possible, often changing their names, castes and residences on this account. In Madras most of the prostitutes live beyond municipal limits, and only come into town at night to ply their trade. In Secunderabad we are told that women pull the soldiers' punkahs at night. This might be used as a strong argument in favour of the introduction of steam as in the General Hospital at Madras.

Under the heading "Statistical Statistics" European Troops—we find that while the population of Madras was estimated at 720,000 in 1839, and 450,000, in 1863, it is now proved to be not quite 400,000, and most probably it never exceeded this figure. The mortality in 1871 was registered at 13.034, and assuming this to be exact we have a mortality rate of nearly 33 per 1000, so that Madras is not the healthy town it was formerly believed to be. The General Review of Madras is so interesting that we give it in full.

"Madras although so large a town, is unproductive in a politico-economical sense.

"It has no prosperous manufactures or industries that would naturally attract a population, or cause it to increase rapidly. Rather more than one hundred years ago, it was a mere fishing village, but it grew very suddenly into a town, during the period when the surrounding country was unsettled by war and invasions, and when the East India Company began to dream of conquest and annexation, in lieu of simple trading.

"Its growth was dependent on an accident, that is, on the presence of the English Factory, and on the fact that, in the struggle among foreign traders for supremacy in the East, the English proved themselves the strongest, able not only to protect themselves from the tyranny and extortion of native rulers, but the numerous communities, who were bound up with them in commercial relations.

"As Madras was in its early days, so will it probably remain to the end of the chapter. It is the head-quarters of Government, and the wealthiest and most influential of its native residents are either connected with the administration of the Government, or have derived their wealth and position from those formerly in Government employ. Beyond the official classes, and their very numerous dependents, the few import and export merchants,

"money lenders, retail dealers, and bazaar men, necessary to supply their wants, there are no classes of persons who contribute to the wealth or prosperity of the place. From a sanitary point of view, we have to look at the population of Madras, as made up very largely of a people bordering closely on the confines of actual poverty. A population that, if it can find a sufficiency of plain food and scanty clothing is well off, but that has no surplus income to expend in house decoration, or in the provision of modern sanitary appliances, such as towns of the same size in other countries may necessarily be expected to enjoy... There are many localities within the area of the town limits that are fairly healthy, but these healthy spots are not to be found amidst the older portions of the town, where the soil has become sodden with the filth of bygone generations, and where the air is polluted by gaseous emanations from sewers of indescribable foulness, and where the subsoil water consumed by the population has been tainted from the pollution of the earth. In these portions of the town we shall assuredly find that the people are a sickly and short-lived race."

As regards deaths among soldiers Bellary has been the healthiest station in the Presidency for the last ten years. This has been coincident with a cycle of dry seasons and a perceptible fall in the level of subsoil moisture. Bellary used to have good gardens and grow rich grapes. These are all gone. Sometimes there is barely enough water to supply the troops.

The average jail population during the year was 9,299. The admissions were only 779.9 per 1000, the daily sick 30.3, and the deaths 17.9. Considering that the jail population is of all ages and composed of men of "wild and precarious modes of existence," we think with our author that this mortality is as low as it is possible for the most perfect sanitary regulations to make it; that the "sanitary victory as regards the jail administration of this Presidency is the completest triumph that we can possibly claim." In ten years the hospital admissions have been reduced by more than one-half, and the mortality nearly three fourths. The sickness and mortality in the District Jails is always greater than that in the Central Jails. This is partly due to their defective sanitary arrangements, but Mr. Cornish thinks it is mainly due to the fact that their prisoners are chiefly short-sentence men, while those of the Central Jails are mostly

long-sentenced. He says that "there can be no question that the first and second years of life in jail are the most trying to the health of the criminal classes. The complete change of life involved in confinement within jail must in itself have considerable influence on health &c." The decline in the mortality from cholera, diarrhoea, dysentery, dropsy and anemia in recent years has been very marked, and there can be no doubt that this has been wholly due to improved sanitary arrangements especially as regards diet, ventilation and conservancy. Nowhere has the dry earth system proved such a perfect success as in our Indian Jails, and it would be well if some eminent septs at home would come and see and be converted.

The subject of registration of births and deaths is not yet a pleasant one to consider. The registration of births especially has been a failure hitherto. The last census has shown the population of the whole Presidency to be slightly over 30,000,000, while the total number of births registered has been only 517,109 as only 17 per 1000. The number of deaths recorded is almost equally absurd, being only 444,371, or only 14.7 per 1000. The figures are steadily improving however and in time, when all prejudices are removed, we may expect accurate returns.

The much disputed subject of cholera comes next to be treated. We read that the emanation of cholera that left Lower Bengal in 1863 did not finally die out in some districts of this Presidency until the first quarter of 1868. also that the epidemic still prevailing in some parts of Southern India in the early part of 1872 left Bengal in 1868. It is hence concluded "that the duration of a cholera epidemic in southern India is from four to six years, that it has distinct periods of development, of vigorous life, and decline, and that the latter stages of the 1868 epidemic had commenced in the year 1871." A remarkable peculiarity has been noticed in the progress of the epidemic. While its general direction has been southward like that of all cholera epidemics, in 1871 it made a distinct backward or Northern movement into districts which had been passed over untouched in 1870. It is pleasant to notice that the mortality from it has been much less than from the previous epidemic. Many carefully observed facts are recorded in this report which tend to prove that cholera spreads from one village to another and from one district to another by human intercourse, and that its local spread in individual towns and

villages is largely favoured by the use of contaminated water. There is nothing whatever to show that its progress is favoured or obstructed by the wind. The cholera which cut up the poor Hussars at Secunderabad has been traced with tolerable certainty. They got their water supply from a well on the parade ground, open to all, the immediate neighbourhood of which was used by native travellers as a latrine. Cholera appeared in the bazaar at Secunderabad on the 20th May attacking and killing three travellers who arrived there two days previously from a district at the east end of the Nizam's country where cholera prevailed at the time. On the 22nd the wife of a sepoy was said to have died of it. On the 23rd a party of travellers came from the east through villages affected with cholera and encamped close to the Hussars' barracks. On the following evening it broke out among the Hussars and in 48 hours 53 persons were attacked; the whole force of the outbreak was at an end practically after the fourth day. The water supply was changed as soon as the disease made its appearance. In the case of an outbreak at a place called Kotapully in the Kurnool district in January 1871; some travellers arrived there from cholera-stricken districts on the 23rd, and left on the 24th, three of them were seized with cholera on the 24th, and on the 25th 41 of the villagers were attacked. Only a few more cases occurred and then the disease died a natural death. This was the only outbreak of cholera in the district during the year. The water supply at Kotapully was from a shallow open well frequented by travellers and villagers. The water was impure and liable to pollution, and the disease broke out "on the second day after the arrival of the pilgrims, three of whom suffered from it during their stay in the place, i. e., "the outbreak of disease occurred at a time when the "fermentation changes in an assumed choleraically polluted water had had time to take place." In this case the facts are strongly in favour of the disease having been caused by polluted water. It is curious however that the disease should stop so suddenly, when there is nothing to show that the water supply was changed as at Secunderabad. If the outbreak was due to choleraic contamination of the water by the pilgrims, why did it cease so soon? Since the disease prevailed extensively in the village on the 24th the water must have been fearfully polluted on that and succeeding days, and yet the cholera died out in a day or two. It is not possible that all the predisposed persons were attacked,

and that the remainder were proof against it for the time being.

20,823 deaths from small pox were registered during the year. The wonder is that the mortality was not greater. Vaccination as at present carried on is no check to its spread. Not five per cent. of the children born are vaccinated under one year of age. This is not the fault of the vaccinators but of the system. What is wanted is compulsory vaccination, and there can be no difficulty in this now that a large proportion of the births are registered. The evidence of 1871, like that of previous years seems to show that "in the south of India cycles of cholera and small pox alternate, "so that when cholera is raging, and reaping a full harvest "of victims throughout the length and breadth of the land, "smallpox is for the time being in abeyance, &c."

In regard to fevers some new and important facts appear to be made out. Hitherto the presence of malarious fever in any locality was supposed to be fully explained by local conditions of soil and air. The sickness statistics of the last five years however show that we must take wider views of malaria, and seek for other causes of its prevalence and spread. These show that "Malaria, or whatever we may "choose to call it, has existence and laws of movement independent of mere local conditions of climate and physical geography." A malarial wave has been passing southwards and westward for the last few years. It reached Salem in 1869, and Coimbatore and Trichinopoly in 1870. This is shown by the accompanying table which gives the mortality from fever.

| Districts    | ... | 1868  | 1869  | 1870   | 1871   |
|--------------|-----|-------|-------|--------|--------|
| Salem        | ... | 5,771 | 9,271 | 15,658 | 19,500 |
| Coimbatore   | ... | 3,425 | 3,483 | 7,612  | 11,925 |
| Trichinopoly | ... | 2,521 | 2,689 | 6,289  | 9,942  |

The mortality from this cause in South Canara has increased in 1871. The observations have not extended over a sufficient number of years to warrant us in drawing any practical conclusions as yet, but enough has been done to encourage Sanitary Commissioners in working out the problem.

We have not noticed all the subjects treated of in this volume, but we think we have written enough to show its great value. We do not know any work more useful for Assistant Surgeons of the Indian service on their first arrival in the country.

## MEDICAL MISCELLANY.

### *A new means of combating muscular contraction.*

Every one is familiar with the resistance offered by muscular contraction in the reduction of dislocations or of fractures with displacements of the fragments. In order to avoid this difficulty, resort is had to reduction as soon after the accident as possible, to profit by the condition of stupor existent at that time. After this period etherization becomes necessary. M. Broca has devised, says the *Lyon Medical*, a means which is void of the inconveniences of anesthesia; it is compression of the principal artery of the wounded limb. The muscles deprived of the blood necessary for the exercise of their functions by compression of the brachial or femoral arteries are unable to contract.—*Medical Press and Circular*.

### *The Female Medical School at Zurich.*

The *Revue des Deux Mondes* gives some interesting statistics of the female students at Zurich since the year 1861, when two Russian ladies first ventured to attend the Zurich classes, a couple of Zurich dames having been previously admitted to certain lectures. The appearance of the Russians led to a discussion in the senatus in 1865, when parties were pretty evenly balanced; but no decision was arrived at, as it was thought the ladies would hardly persevere in their designs. In 1867, in fact, one of the visitors did withdraw; but the other, who had made real progress, announced her intention of going up for the degree of M.D. This necessitated admission as a matriculated student of the University, to which the rector gave his consent without further consulting the Senatus, under the impression, apparently, that it would prove an isolated case. The lady passed with honours, and before the close of the year two more female students arrived from England. In 1868 Switzerland and America each sent a representative, and two years after Austria and Germany. By far the largest number, however, came from Russia. In 1869 there were nine Russian students of the fairer sex, and at the end of 1871 no less than seventeen. There are now sixty-three in all at the University, fifty-one of whom, including forty-four Russians, attend the medical, and twelve the philosophical courses. The large number of Russians may be explained by the fact that for

some time ladies have been admitted to the gymnasium or upper schools of the Russian Empire, and even to a special course of lectures at the Universities. Since 1867 six ladies have taken the degree of M.D. at Zurich and seventeen have abandoned their studies in despair. As the medical students at the University number at present 208, it will be seen that the ladies are nearly one-fourth of the whole. Of the six Zurich M.D.'s, two are practising in St. Petersburg, one of them in partnership with her husband, a third is with Dr. Garrett-Anderson in London, the fourth Physician to the Children's Hospital in Boston, and the fifth assistant to Dr. Bierner, Professor of Clinical Medicine at Zurich.—*The Doctor*.

### *Introduction of corrosive sublimate hypodermically, in Syphilis.*

Dr. Carl Proegler, of Naperville, Ill. (*Chicago Medical Jour.*), thinks, with Prof. Lewin of Berlin, the subcutaneous injection of corrosive sublimate in syphilitic cases is decidedly preferable to internal administration, fumigation, inunction, or introduction of mercurial suppositories. From statistics given by Prof. Lewin, Surgeon-in-chief of the syphilitic wards of the Charity Hospital, Berlin, where upwards of 2,000 patients have been treated by the subcutaneous method with the mercurial sublimate, it was found that from 1½ to 3 grains of the bichloride is all that was needed for the average of cases, including the most obstinate forms of tertiary syphilis. The quantity used daily depends somewhat on the gravity of the case. Ordinarily, doses from ½ to 1 of a grain are administered subcutaneously once each day. If the prodromes of salivation occur, a pause of three or four days may take place, when the treatment may be resumed. When a patient exhibits a peculiarly sensitive diathesis, and whenever the sublimate injection is followed with pain, a small quantity of morphine may be added as a corrective. In this class of cases he has added the morphine, or applied externally a chloroform liniment, and never had any irritation or abscesses resulting.

Prof. Von Siegmund (*Berl. Klin. Woch.*), in commenting on his 200 cases recently treated with subcutaneous injections of sublimate, says that there occurred but two abscesses in all, which resulted mainly from unskilful insertion of the liquid. He has seen no affection of the gums, no disturbances of the respiration or circulation, nor any other mercurial effects of any moment.

Dr. Proegler treated last year, in the German army, over 150 cases of syphilis by this method with success, and also, conjointly with Dr. Gale, of Aurora, over 40 cases in private practice.—*The Medical Record*.

*Belladonna in C*

g.

Dr. R. D. Boye, stimulated by at the Tennessee Medical Society, upon a paper by Alexander, "On Opium poisoning treated with large doses of belladonna," reports a case in the *Nashville Journal of Medicine* for August.

A child, aged seven months, through mistake of the mother, took morphia sol., grs. ij. After profound coma had endured some hours, belladonna ex. grs. ijss. (rubbed in water as a vehicle) was given every ten minutes, till ten grains had been taken. It was introduced by enema.

It must be remarked, that other means were used conjointly with the belladonna, as a stream of cold water to the head, hot pediluvia, flagellation, a strong decoction of green coffee by enema, &c.

The appearance of resuscitation was increased in the number of respirations per minute, then dilatation of pupil—at first continually alternated between dilatation and contraction, till at last a full dilated pupil was shown. Anæsthesia gradually subsided, muscular action resumed its office, and in two hours the child cried, and from that time recovered.

It is also mentioned that Dr. N. G. M. Walker had a case where iandatum was taken for suicidal purposes, in which belladonna thrown into the stomach had the happiest effect.—*The Doctor*.

*Physiological Antagonism between Atropia and Morphia.\**

Miss C., æt 25, a lady of nervous temperament, and who had on several occasions suffered from various forms of neuralgia, consulted me for severe neuralgia in the left side of her face and head, produced by a dental operation to which she had recently submitted.

Having, on previous occasions noticed the hypodermic employment of morphia and atropia combined, to be followed, in this lady, by the happiest results, I determined to use this mode of treatment again for the present existing suffering.

I may here observe that my experience coincides with the teaching I acquired while a pupil of Dr. Stokes—namely, that to obtain the best results from the use of hypnotics, it is advisable to administer the drugs at the usual hour of sleep so as to anticipate, as it were, the normal process of habit.

In accordance with this principle, I paid my patient a visit at 10 o'clock in the evening, purposing to inject under the skin of the arm  $\frac{1}{2}$  grain of acet. morphia, along with 1-50th grain of sulph. atropia.

\* Read before Medical Society of the College of Physicians of Ireland. By Dr. J. Magee Fenny.

The addition of the atropia diminishes the tendency to nausea, so constantly following the administration of morphia alone, and produces anodyne effects not to be obtained by morphia.

As, however, my atropia solution had been in my possession for over three months, and as I noticed several fungoid bodies floating through it, I conceived it had lost much of its strength, and that I ought, therefore, so as to obtain its full effects, to give of it a larger quantity than usual. Acting on this conception—a proceeding which the circumstances that followed made me greatly regret—I administered subcutaneously double the usual quantity of the atropia solution, along with  $\frac{1}{2}$  grain of morphia. In about twenty minutes, Miss C.'s maid hastily summoned me to her bed side.

The condition I found her in was quite new to me. The symptoms were as follows:—Complaining of great cold, so that she was shivering and trembling all over (to which perhaps alarm may have tended), and her teeth chattering, her feet and hands were cold, although a hot jar was placed to her feet, and additional blankets covered her. The tongue was dry, parched, and rough, and this condition evidently extended to the pharynx, as she complained of dryness of the throat, and constantly asked for drinks, although, when they were given, she was hardly able to swallow them. Her speech was thick and inarticulate; she complained of dimness of vision, saying she could not see me, and that flashes of bright light passed before her eyes. The pupils were much dilated and unaffected by approximating the light of the candle towards them. The pulse very small, up to 130. Respiration 32, and very shallow. On being questioned why she could not draw a deep breath, she replied that she was caught on attempting to do so.

The case was evidently one of atropism, produced by an overdose of the alkaloid. Hoping the ill-effects would shortly pass away, I remained beside her to watch the result—but instead of becoming better, I soon saw the case change, from one of simple interest, into one of no small anxiety to me.

In about ten minutes, she evidenced great uneasiness, tossed about, flexing and extending her arms and legs: she now became delirious, talking on various subjects, being quite unaware of my presence, and imagined several persons were in the room, giving directions to them on various domestic matters. She grasped at imaginary objects in the air; and from, no doubt, the parched state of her throat, frequently attempted to pass her finger to the back of the throat, and nearly succeeded, on one or two occasions, in producing vomiting. The pulse still kept high, and I determined to send for additional aid and advice. Before doing so, however, the thought occurred to me to try the effect of a dose of morphia as a general physiological antidote—as the recollection of cases of belladonna poisoning having been successfully

treated on this principle by Dr. Wharton, flashed across my memory. (These cases are detailed in the *MEDICAL PRESS* for 1862.)

Accordingly I injected  $\frac{1}{2}$  grain of the acet morphia.

In less than five minutes I observed the restlessness and jactitation cease, the skin to become warm, and the respiration fall to 20, while the pulse came down below 100, and was fuller. In a few minutes afterwards—ten altogether from the second injection—my patient was sound asleep, and in a fair way to spend a quiet night. After remaining in the house about half an hour longer, I took my leave, and in the morning I learned she had slept well, had taken a hearty breakfast and that the neuralgia had entirely disappeared. She visited me in my study in the afternoon, and with the exception of slight inconvenience arising from the still dilated condition of the pupils, she expressed herself as being as well as ever.

The points of interest which this case furnishes to the scientific and the practical man alike are neither few nor insignificant. Whether the quantity injected would have, if left to itself, ended in the same happy way, or otherwise, I am unable to state, but the points of resemblance between the symptoms just detailed, and those of a poisonous dose of belladonna, were too striking to buoy me up with any such hope as that.—*Medical Press and Circular*.

#### *Condemnation for concealment of birth; delivery six weeks after.*

A girl named Bernard, aged 20, was about 7 months advanced in pregnancy when, on the 8th October 1868, some hæmorrhage came on and the pregnancy seemed to have disappeared. A crime was suspected. Questioned, the girl confessed that being conscious of a flow she retired to the water-closet, where she remained ten minutes, 'there,' she said 'every thing left me: I had no time to look because I was called away.' The midwife of a little place in the neighbourhood and the District Medical Officer both affirmed that the girl had been recently delivered. Nevertheless, when the water-closets were examined by order of the Police no foetus was discovered. Inquiries were repeated. It was urged upon the girl that it was her interest, in order to escape severe punishment, to make free and full confession and she was asked if she had not thrown her infant into the pig-stye? After protesting for some time against this supposition she confessed at length that she had done as was suggested. But the pig-stye was very carefully cleaned out and neither human remains nor trace of blood were found. After a trial, in which her advocate appealed to the indulgence of the tribunal, she was pronounced guilty, on

her own confession, of the crime of concealment of birth, with the remark appended that it was not established that the child had lived; and she was condemned, on the 6th November, to six months' imprisonment. Adèle Bernard, who in consideration of her spontaneous confessions had been neither arrested nor imprisoned, presented herself at Vic to undergo the punishment to which she had been condemned and it was perceived that she was in a condition of advanced pregnancy. Transferred to the Departmental Hospital at Nancy, she was there delivered, on the 24th December, of a well-formed female child at full term. At that time the ten days allowed for appeal had long elapsed; but the Procureur-General who is allowed two months within which he may interfere, exercised his right in the girl's favor, and she was brought up to Court from the Departmental Hospital on the 18th January, 1869. Being there questioned she declared that her parents and the midwife had beset her to induce her to make confessions; that they never ceased telling her that if she did not tell what had become of her child she would be taken to Vic (in spite of her ill-health) put in prison and condemned to the galleys for 15 or 20 years. Subsequently they told her that she must not retract her declaration. They had terrified her by setting before her the severe punishment which awaited her if she did not confess. The Court quashed the conviction and discharged the prisoner. This case illustrates the fact that judicial confession, which in ancient jurisprudence afforded the highest degree of proof, and which is still in England, so far relied upon as to dispense with an appeal to the jury, is far from supplying absolute certainty. How worthless was the system which, in order to obtain the confession of the guilty, legalized torture for the purpose and declared emphatically that an innocent person would never declare himself guilty contrary to the fact!—How much are they mistaken who to render judicial error impossible lay down as a rule that the erroneous condemnation of an innocent person will elicit from him such protestations that their eloquence would be irresistible!—*Jour. Des. Cours. Méd.*

#### *Chloral Hydrate in Hydrophobia.\**

"There has been a case of Hydrophobia, a grass-cutter of the 1st Cavalry, who was bitten 5 weeks since by a jackall. I noticed the case, because the administration of Chloral Hydrate most completely controlled the most distressing symptoms."

\* Extract from Diary of Dep. Insp. Genl., L. M. D., Nagpore Fort, Kamptee, 12th October 1872.

*Blue light as an organic stimulant.*

At a recent meeting of the Philadelphia Agricultural Society, General Pleasanton read an interesting paper on the effects of sunlight on plants and animals, when transmitted through blue glass. Geraniums which had become unhealthy, recovered their vigor and became more deeply coloured when covered with blue glass; and the branches of the same grape-vine showed a remarkable difference in their growth of leaves according as they were or were not covered with blue glass, the leaves on the former having a diameter of six to eight inches, being of a deep-green color and perfectly healthy; while the uncovered branches were only two inches in diameter, and of a pale, sickly yellowish color, indicating a feeble vitality. The paper also mentioned a case of the wife of a Philadelphia physician who had for some time been suffering from a complication of disorders which had baffled the skill of her physicians, and who, on the suggestion of General Pleasanton, tried the following plan: Every other pane of glass in one of the windows of the patient's room was removed and blue glass substituted, and the patient required to expose her back and spine to the action of the combined blue and white lights for thirty minutes each day, at the same hour. At the commencement of treatment she was unable to sleep or eat, was in a miserable condition, and wasting rapidly. At the end of ten days the pains in her back were less, her hair had commenced growing thickly, and there was a marked improvement in her general condition. In three weeks she was almost entirely well.—*The Medical Record*.

*Treatment of Goitre.*

Th. Sittell, M. D., of Cincinnati (*The Clinic*), recently had a patient with goitre, which measured when first seen  $21\frac{1}{2}$  inches in circumference. The treatment was adopted as recommended by Lücke, which consists in the injection into the tumor of the tincture of iodine. Within three months eleven injections were made into its parenchyma—in from 10 to 25 drop doses—which reduced the tumor four and one-fifth inches; and its steady and constant decrease was evidence of the efficacy of treatment, and promised future perfect success. The digital compression after removal of the syringe and the closure of the wound of penetration by adhesive plaster as recommended by Lücke were always observed. The suggestion, too, was adopted of permitting the needle to remain in the tumor while the body of the syringe was withdrawn to be refilled that there might be the least possible danger of injecting the iodine into a minute vein. The almost entire absence of local reaction was probably due to the fact that cold dressings were always applied to the surface after each injection.—*Id.*

*Ether versus Chloroform.*—By J. MORGAN, M.D., F. R. C. S.

I NOTED this day four patients I etherised. One, a very strong man, where extraction of a cataract\* was performed. Insensibility was obtained in ten minutes; the pulse remained steady; there was no sickness of stomach; and the operation was most successfully and happily terminated—just as in a similar case which I etherised a few days previously.

Another vigorous patient, of 17, in four and half minutes sank quietly into insensibility with the most perfect result; pulse from 80 to 86; respirations increased six per minute. I occupied about five minutes in operating; and the patient emerged from insensibility equably and gently—there was no excitement or sickness.

Another, of 24, became influenced in ten minutes, with no excitement beyond bursts of laughter; there was no sickness of stomach. I occupied five minutes in operating; the recovery was most equable.

Another, of 30, became influenced in eight minutes, and fully so in ten minutes, with no excitement or approximation to convulsions, and no sickness. I occupied six minutes in operating.

In the last case I had used chloroform three times previously, and ether once; and in the second last case I had used chloroform five times, and ether once. In both, but in the second last more particularly, the convulsive stage under the use of chloroform was always very severe and protracted.

Ether produced incomparably superior results in every way, accompanied by a sense of much greater security. I particularly noted these instances, as I had observed the previous effects of chloroform on the patients.

It is but natural that we should examine with attention the expressed opinions of surgeons as to an agent which has been most used in America, the country which may be allowed to have been the birthplace of the application of anesthetics in surgical practice. Since the time when Dr. Morton, so long since as 1846, introduced the use of ether as a "pain-destroyer," ether has stood the test for the period which has since elapsed, and ether is still, in that country, the more universally adopted means of obtaining insensibility.

\* By Dr. Jacob.

I find in the last very accurate surgical work which has issued from the press, 1871, the question of *Ether versus Chloroform* is thus reviewed\* :—

"Chloroform is more prompt in its effects; the patient is usually quieter while coming under its influence; it is less apt to cause vomiting; a smaller quantity suffices to produce anaesthesia, and the patient reacts more quickly when the inhalation is stopped. It, however, requires greater care in its administration than ether, and its use is attended with much greater risk to life! This statement gives my own estimate of the relative merits of these agents, and I believe corresponds pretty closely with the opinions usually entertained on the subject. It is right, however, to state that Dr. Lente and Dr. Squibb, of New York, believe that anaesthesia may be induced by means of ether, as quickly and safely be done by means of chloroform, and with a quantity costing less and weighing very little more than the requisite amount of the latter; and other writers have maintained that vomiting is, at least, as frequently caused by chloroform as by ether."

In support of the latter observation, I myself refer to the cases I have just witnessed, and that in the last thirty patients I etherised, within ten days sickness of stomach occurred but in two, and in these instances, some food had been taken one hour and a half before operation.

"For my own part," says Dr. Aschurst, "I confess I prefer ether in a very large majority of cases; it is certainly, I think, safer than chloroform, and is sufficiently convenient for almost every case that the surgeon is called upon to treat. There is no danger, as in the case of chloroform, of the vapour being too concentrated; indeed, some surgeons, as Dr. Lente, endeavour to prevent even the slightest admixture of air."†

We have thus reported, by the most recent authority, the value of the arguments for either chloroform or ether, "*safely to life*" and the avoidance of those very unpleasant accidents, "deaths by chloroform," presenting the strongest claims in favour of Etherisation, and justifying the candid remark of Mr. Erichsen,‡ of London, when he states,—“The fatal consequences which have attended the employment of chloroform, have caused American surgeons almost entirely to trust to ether in preference. Ether is certainly a *safer* agent than chloroform, but few deaths having resulted from its administration; and the only argument

in favour of the use of chloroform rather than ether is, that chloroform is the most *convenient* agent! its effects being produced more quickly, and no disagreeable smell being left, as in the case of ether." Fortified with such an opinion from so eminent an authority as Mr. Erichsen, M. Didey would be well supported in passing the condemnatory resolution I have already referred to, "that any surgeon using chloroform instead of ether as an anæsthetic would be culpable."

Surely, it would be a small solace to a husband for the death of a wife, or to a wife for that of a husband, to be told that chloroform, which caused the loss of what was held most dear, was used, simply because, while it was far more dangerous, "it was more convenient." Indeed, in a case of death by chloroform, it appears to me that legal if not moral culpability might be strenuously urged against the administrator, for using an agent admittedly *more dangerous* than another, simply on the ground as stated, and "the only argument" in its favour, that it was "*more convenient*." The question is thus becoming daily more serious and debatable.

The late American War furnished enormous opportunities of testing the merits of ether. In one of the most recent and critical treatises on Military Surgery,\* the preference is given to ether, supported amongst other arguments by the fact that, taking the reports of the General Hospital (Mass.), for ten years, 1850 to 1860, where ether was exclusively used, "notwithstanding the greater severity of the cases (mostly railroad and street accidents) and the more crowded condition of the hospitals, the average mortality was substantially the same as before its introduction. This testimony demonstrates the *superiority of ether* as compared with chloroform." "Ether, ought generally to be preferred to chloroform as being less liable to destroy life immediately."

Few more cogent arguments could be collected than this ten years' epitome of the successful result of ether, when it is remembered that these cases did not even occur in military practice, where healthy and active soldiers were the unfortunate sufferers, but in a general hospital, where cases of all varieties, and in diverse circumstances of life, were encountered. It may also be admitted that operations were undertaken with the assistance of etherisation, which, previous to its introduction, would have been unattempted; yet, while pain was absolved by this "comparatively, though not absolutely, innocuous agent," as styled by Prof. Hamilton, the statistics prove that it in no way contributed to an increased mortality rate.

\* "Principles and Practice of Surgery," By J. Aschurst, p. 75.

† *Ibid.* pp. 75-77.

‡ "Science and Art of Surgery," p. 17. London, 1869.

\* Dr. Hamilton, Professor of Military Surgery, Bellevue Hospital, New York, p. 621.

On inquiring as to the recent practice the large American institutions, I find in the excellent and compendious Reports of the Boston City Hospital, 1870—including 1,113 operations on in-patients, and 1,062 on out-patients—that amongst all those reported, with such critical procedures as excision of the upper jaw, œsophagotomy, ligature of large arteries, including that of the arteria innominata, excision of the hip-joint, amputations, &c. ether alone was invariably used, and no ill-consequence or apprehension has been noticed.

In Bellevue Hospital, New York, with something like 1,800 beds, chloroform has never been used for the last four years, with the many hundreds of operations necessarily constantly performed there. In the Charity Hospital, Blackwell's Island, New York, where etherisation alone is used constantly; not hundreds, but thousands of cases have been submitted to its influence without one *contretemps*. This I have the authority of the Resident Officer for stating, as he himself administered the ether to a very large number of these patients\*; while, on the other hand, in the cases in which he saw chloroform used, namely, two cases of hernia, one of hare-lip, and one for repair of a bitten-off nose, there was always much reason for apprehension, and he witnessed the death of one of the patients from the effect of the chloroform, which was being given where an operation, though painful, but no way involving life (the formation of a nose), was about being performed; it was never commenced, as the patient, a strong healthy looking woman of 35, died on the table, notwithstanding all the means anxiously and actively used for re-animation.

Dr. Mott is said to have preferred chloroform to ether.† Evidently, however, Dr. Mott failed to leave the impress of his preference behind him, as in neither of these Institutions—to both of which he was attached—has anything but ether ever been used since his death. I have obtained the summary of one very remarkable case of a large aneurism of the thoracic aorta, treated by galvano-puncture, at Bethove Charity Hospital, where ether was used on several occasions without any ill consequences, and with a feeling of perfect safety where chloroform would have been inadmissible. It is so remarkable that I append it in illustration.

Bridget Dillon, aged 57, an Irish woman, and comparatively strong; suffering from a large thoracic aneurism: submitted to the attempt of obtaining occlusion by the galvano-puncture; she was etherised, and came under its influence in about eight minutes; needles were introduced through the chest into the tumour, and connected with a current of seventeen cells. There

\* Dr. Hodon.

† Hamilton's "Military Surgery," p. 612.

was no pain or ill consequence whatever. On one occasion the use of the needle was tried *without* ether; but the pain was excruciating beyond endurance.

The whole question of the comparative use of the various anæsthetics has been lately very fully reviewed by Dr. W. Coles, who read an elaborate paper replete with overwhelming evidence, at the Medical Society of Virginia, this last session. The arguments in favour of Ether *versus* Chloroform are unanswerable when the great question of *danger to life* is considered. By combining the American statistics, collected by Dr. Andrews, of Chicago, and those of England, by Dr. Richardson, of London, we obtain the following general view of the absolute and relative mortality caused by the several anæsthetic agents in use:—

|                                 | Deaths. | Inhalations. |                |
|---------------------------------|---------|--------------|----------------|
| Ether                           | 4       | to 92,815    | or 1 to 23,204 |
| Chloroform                      | 53      | „ 152,260    | „ 2,873        |
| Mixture of Chloroform and Ether | 2       | „ 11,176     | „ 5,588        |
| Bichloride of Methylene         | 2       | „ 10,000     | „ 5,000        |

These figures the author regards as the most valuable and reliable that have ever been published in reference to the *mortality* in anæsthesia. They demonstrate a state of facts so absolutely at variance with the received opinions of five years ago, as to become perfectly startling. They indicate that chloroform is *eight times more dangerous than ether, twice as dangerous as a mixture of chloroform and ether, and as far as experience goes, it is more dangerous than bichloride of methylene.*

In view of these facts the question arises—Will chloroform maintain its present popularity as an anæsthetic in surgery? We do not believe it will; unless some method, other than we have at present, is devised to lessen the risk dependent on its use, we cannot but think its popularity must decline. In the face of such figures as adduced, *chloroform cannot, and ought not, to supersede ether.* The inconveniences attending the use of ether are more than compensated for in the risks from chloroform.\*

Nothing can put the question in a plainer light. One death from ether in 23,204 cases reduces the risk to a nominal amount.

It is to be recollected that in etherisation there is not the constant and harassing danger ever present; the surgeon is freed from the anxiety that more or less accompanies him into the operating chamber, and his attention can be altogether devoted to the operative procedure in which he is immediately engaged, not, as is too frequently the case, distracted by inquiries as to the condition of the patient, and the influence which the chloro-

\* Hay's American Journal, April 1872, p. 483.

form is exciting. Friends who are intensely interested, are relieved from an additional cause of anxiety which the occasional notice of "Death by Chloroform" may have impressed them with, while equal, if not greater, security of the avoidance of pain is secured, with *eight times less danger*. Facts such as these cannot fail "to become perfectly startling," and deeply to impress a patient about precipitating himself into the mysterious sleep of insensibility.

With such convincing statistics from the mother country of anesthetics, where Ether is used, and from Great Britain, where Chloroform was introduced and is used,—with the opinion expressed in the latest standard work\* from the former country of unalterable faith in the use of ether,—with the opinion, also, of the author of a standard work† in Great Britain, where, though chloroform is the more largely used, its danger is admitted, and the only argument adduced in its favour is that of convenience; in the face of the discussion at present being agitated on the Continent‡, and with the occasional reports which crop up of deaths from chloroform, the dangers of chloroform, and the hair-breadth escapes from chloroform, it is evident that its popularity must wane when calmly contrasted with ether as an anæsthetic agent.

The surgeon who makes use of chloroform will employ an agent not only *eight times more dangerous* than ether, but actually the *most dangerous* of the other agents in use.

Should he not have put these issues before the patient, and should any casualty occur, his responsibility may be indeed seriously brought into question.

The critical examination into the comparative merits of Ether and Chloroform which I have already referred to, as conducted by the Committee of Investigation appointed by the Royal Medical Chirurgical Society of London, resulted in important observations.

The inquiry was aided by the use of the hemadynamometer in testing the effect of the heart's action and of the influence of these agents upon it. The report states—"The essential difference between the action of Chloroform and of Ether is to be found in the effect produced upon the heart. The first operation of both agents is to stimulate the heart and augment the force of its contractions; but, after this, Chloroform *depresses* the heart's action, whereas Ether appears to exert but little influence upon the muscular movements of that organ." The general accuracy of this remark, though tested by so comparatively coarse an

\* Anshurst.

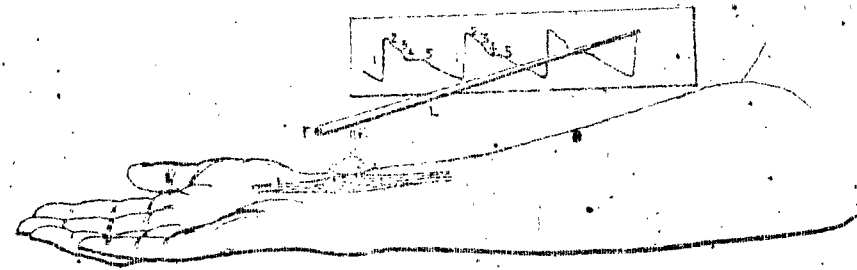
† Eriksen.

‡ Société de Médecine.

instrument, is borne out by observation of the pulse-writing as indicated by the sphygmograph, an instrument of far greater delicacy which has been since introduced into practice; it affords direct instruction in comparing the influence of etherization on the pulse, with the healthy condition, by the evidence of the writing.

The accompanying outline of the principle of the sphygmograph will serve to explain briefly its mode of action as writing from the natural soft pulse:—

FIG. 1.



a. The pulse, showing the artery in the act of pulsation.

c. k. The lever, which communicates its pulsations by being laid on the wrist.

f. l. The index, or pen, which marks the pulsations on a slip of paper, or glass, which receives the writing by being worked along by a rack and spring.

On examining a pulse writing, the component motions may be thus analysed—

- Vis a tergo. {
1. The First Ascent. Due to the jerk, by the propelling heart.
  2. The Indentation. Due to the elastic re-action of the blood-vessel itself.
  3. The Elevation. Due to the continued force of the heart's contraction, sending on the blood fluid.
  4. The Break. Due to the sudden stopping off of the heart's action by the valves shutting.
  5. The Second Elevation. Due to the action of the blood-vessel itself.

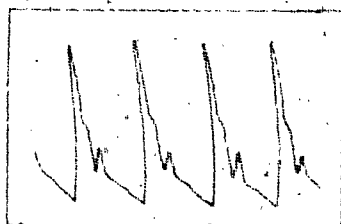
It has already been shown by the Chloroform Committee above quoted, that ether exercises a stimulating effect on the heart's action, instead of the depressing and sometimes fatal one of chloroform. It therefore follows that sphygmographic delineations, or pulse writings, should give some aid, as typifying the immediate effect of etherization on the heart itself. If the general influence of the "vis a tergo" due to the immediate propulsion of the blood from the heart be understood, in causing the ascent

of the pulse-writing, with its succeeding fulness or distension, such evidence will be interesting, as showing the condition and vigor of the heart's action during the sleep of etherization.

In order to simplify the general conclusions as to the value of the indications, I add a bird's-eye view of some of the modifications of pulse-writings in various diseased conditions—more particularly with regard to the indications due to the "*vis a tergo*," or immediate influence of the heart.

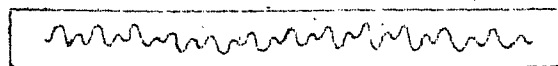
Typical pulse-writings of opposite characters will be instructive. Thus—taking an example of enlargement of the heart (Fig. 2.) The high elevation of the pulse-writing is remarkable, compared with the undulatory score of typhus fever (Fig. 3.) or again with the feeble indications of the flickering heart of a patient worn out by consumption, given during the last hour of life (Fig. 4).

FIG. 2.



Pulse-Writing given by an Enlarged Heart.

FIG. 3.



Pulse-Writing in Typhus Fever.

FIG. 4.



The feeble Pulse-Writing of an Expiring Heart.

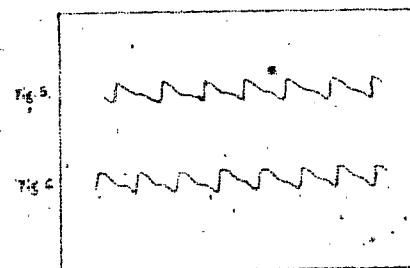
If these be compared with the copy of a writing given by the "Natural soft pulse after exercise and residence in the country," as shown in Fig. 1, the relative conditions and indications may be estimated.

The following specimens of pulse-writing, taken both previous to, and during etherization, prove that the effect on the heart was that already mentioned by the Chloroform Committee in 1864—

"That ether was a stimulant to its action."

Fig. 5 represents the pulse of a female patient, aged 25, who had been confined to bed for five months; pulse-writing taken before Etherization,

Fig. 6 represents it during the full influence. It will be seen that the heart power indication was rather stronger during etherization than before.



I selected another instance of a female, aged 17, also long confined in bed. The contrast of Fig. No. 7 taken before etherization, and of Fig. No. 8, during profound etherization, is notable; the elevation of the pulse-line showing the stimulating property of the ethereal influence.

FIG. 7.

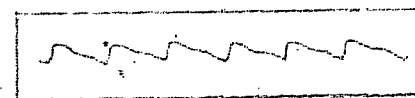


FIG. 8.

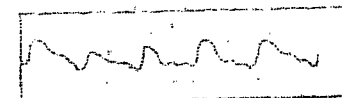


Fig. 9 represents the excited pulse-writing of a small and nervous female patient, previous to etherization and operation.

FIG. 9.

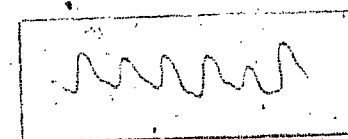


Fig. 10 represents the pulse-writing of the same patient, when steadied by etherization. The contrast is remarkably favourable.

FIG. 10.

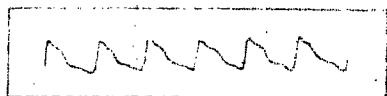


Fig. 11 represents the pulse-writing of a healthy young man of 22, previous to operation for artificial pupil—an affection which had not interfered with his general health.

FIG. 11.

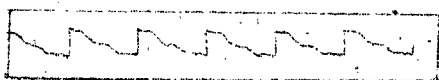
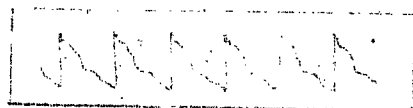


Fig. 12 represents the same, when taken under full etherization and after the completion of the operation. A comparison of this pulse-writing with that of Fig. 1. will be ample evidence of the safety of etherization in its action on the heart.

FIG. 12.



I have taken all but one of these examples as the most unpropitious, occurring in patients of diminished health and vitality; yet it is evident that the most perfect anaesthesia could be invoked under the influence of ether, with an absolute stimulating effect on the circulation, and that the condition of insensibility could be maintained for a considerable time, yet there was no material alteration of the "pulse-writing," and the most perfect sense of security was established.

It is therefore established that—

While chloroform exerts a depressing influence on the heart, ether exerts a stimulating one;

And that chloroform is the most dangerous, while ether is immeasurably the safest of all anaesthetics.

On the opposite side it has been stated that

*The only argument in favour of the use of chloroform is that of its being convenient (a).*

However, on the other hand the only objections which have been put forward by the Committee as bearing against the use of ether were the comparatively insignificant ones of "disagree-

(a) Erichsen.

able odour," that it was "slower" and gave rise "to greater excitement than chloroform." The odour of chloroform, it is to be admitted, is sweeter and perhaps the most agreeable. Few people, however, dislike the odour of ether, and whatever objection there may be to the flavour, its exhilarating effects are such that many have found it a seductive substitute for alcoholic stimulants, even to the extent of producing intoxication. In Ireland, curiously, its virtues, if they may be so styled in this way, have been already appreciated, and as that province, whose inhabitants are peculiarly accredited with astuteness, has been the most noted for its consumption, we may conclude that it presents, despite its supposed disagreeable odour, the recommendation of being "good value" in producing the desired effects; indeed, the intoxicating and stimulating quality of ether has been known for a considerable time, and a *souçon* of its use amongst the better classes of society has more or less existed. Mr. Draper (a), however, has lately put the question of the "Use of Ether as an Intoxicant" in so clear a light that it has attracted considerable attention. He states:—

"The floating idea that there are fair consumers of *Hoffmann's anodyne* and *perles d'ether*, for whom ether has never been prescribed, quite prepares one for the discovery that there is in the northern part of Ireland a number of people who, forswearing alcohol, supply its place with ether—a race to whom ether is what koumiss is to a Kalmuck, ava to a South Sea Islander, absinthe to a certain class of Frenchmen, or gin and whiskey to their more immediate neighbours. That they should take 'nips' of ether morning, noon, and night, as they would whiskey; and—for anything shown to the contrary—drink good luck or ratify bargains in a glass of ether, was not a thing to look for, and is, perhaps, without parallel in the history of narcotic stimulants. The facts rest upon the authority of a number of gentlemen, in their respective capacities of physicians, clergymen, ether-manufacturers, and druggists."

#### *Its Mode of Use.*

"The usual quantity of ether taken at one time is from two to four drachms, and this dose is repeated twice, thrice, or even four and six times daily. It is taken unmixed with water; indeed, its very slight solubility in that fluid would make this a useless precaution; but the usual practice is, to take first a mouthful of water, then the dose of ether, and again a mouthful of water."

#### *Its effect.*

"The intoxication produced by ether resembles that of alcohol, but is much more rapidly produced, and is more evanescent. The

(a) Mr. Draper in the *Medical Press and Circular*.

ether seems to be eliminated entirely by the lungs, and the breath of the ether-drinker always affords ample evidence of his addiction to the habit. I am credibly informed that at the fair of Draperstown—which appears to be the paradise of ether-drinkers—the prevalent smell is not, as at country fairs, of pigs, tobacco-smoke, or of unwashed human beings, but of ether."

#### *Its Influence on the Health.*

"I have not been able to learn that, apart from the moral ill effects common to all excitants and intoxicants, the habitual use of ether brings in its train any peculiar evils, and although it would be wrong to draw a conclusion from completely negative evidence, I am disposed to believe that the votaries of ether incur less danger from the habit than ordinary dram-drinkers; and there are two good reasons for this belief. If we assume that there is nothing specifically injurious in the action of ether, it will rapidly be admitted that, having a definite chemical composition, and not being very liable to adulteration with ether fluids it must be an improvement upon the sophisticated alcoholic potations, which, with these people, it has replaced. Again, the affinity of ether for water is so slight (a) that dehydration of the mucous tissue of the alimentary canal, and that anæsthetic action which so well mark the difference between the effect of ardent spirits and of alcohol in the form of unbranded wine, cannot be evils attending its use.

"All the ether consumed in this way is that which is technically termed 'methylated,' that is, prepared from methylated spirit."

#### *The Quantity Consumed.*

"Now, if we assume the ordinary quantity taken at one time to average three drachms, and this quantity to be (in stimulant effect) the equivalent of half a glass of whiskey, we arrive at the result that three gallons of ether supply the place of 10 gallons of whiskey. It is very difficult to arrive at any accurate idea of the extent to which ether is consumed in the north of Ireland. Omagh is said to take about 400 Winchester quarts (equal to 250 gallons) yearly, and one Dublin manufacturer has sent to Belfast at the rate of 4,000 gallons yearly."

The consumption of ether in repeated doses appears, therefore, to have had no specially prejudicial effect on the health; while it acts as an intoxicant more rapidly than spirits, it is more evanescent. We may conclude from the experience of the ether-drinkers of the north of Ireland that the vapour may be freely used, and the anæsthetic influence unhesitatingly invoked without having any permanent or deleterious effect, although the system may have been as it were saturated, as it doubtless, is by

(a) 1,000 volumes of ether dissolves but 10 volumes of water.

the ether tippler who imbibes his two or three teaspoonfuls perhaps six times in one day—an amount more than sufficient to exercise full insensibility by the mere inhalation of its vapour.

It has been stated that etherization is more tedious than chloroform in its action. I find this by no means the case. When the time occupied in gradually bringing a patient under the influence of chloroform, and in proportioning the amount of the chloroform inhalation to the varying conditions of the pulse and system, are both taken into account, I do not think there will be found much, if any difference in time, when the aggregate of cases is taken; but even if an additional few minutes were consumed (which I do not admit) the safety of etherization will amply counterbalance any inconvenience on that score.

It is to be remembered, that with regard to this question of time, there is a diversity of opinion, and as I have already mentioned, practitioners of eminence and experience (a) assert, that, "anæsthesia may be induced by means of ether as quickly as can safely be done by means of chloroform." Much evidently would depend on the mode of administration; the aid given by the patient, and the purity of the ether. I have seen instances where these conditions were attended to, and where etherization was more rapidly induced, even in half the time which had been occupied in the administration of chloroform on previous occasions, to the same patients.

The solution of the question of time, appears to be in a great measure dependent on the amount of ether vapour which is taken by the patient. In the directions given for etherization it is stated, that some use the sponge or the cone of paper, and it is remarked "that enough air gains admission through the interstices of the (b) sponge moistened with ether held over the mouth and nose;" while others arrange the apparatus so as to prevent "the slightest admixture of air" (c) as does Professor Porta, of Pavia, "who stops the nostrils and uses a bladder closely fitted to the mouth" (c).

Dr. Smith, of New York, uses a large india-rubber ball, with an aperture cut for the face. The ball is lined with lint, which receives the ether.

Dr. Lento uses a cone of paper, with a towel pinned inside, and so folded as to prevent any, "even the slightest admixture of air."

While, therefore, we find it stated that "the admission of air is comparatively of little consequence," that "enough air enters through the interstices of the sponge," and, again, that it is endeavoured "to prevent any, even the slightest admixture of

(a) Dr. Lento, Dr. Squibb, Dr. Godon.

(b) Dr. Lento.

(c) Ashurst, p. 77.

air," evidently there is abundant proof of the safety of ether, and of the efficiency of its action. Some of the objections which have been urged against its use, of causing delay, sickness of stomach, headache, or spasm, are dependent on this very diversity of application, as it is found by those surgeons who exclude air that the results are satisfactory in the extreme.

We have here the key of the question. Ether vapour being considerably heavier than air, when applied by the sponge would flow away unseen from the mouth and nose, and much of it thus escape inhalation, while from being concentrated, and more efficiently applied by the other modes last described, it would act more satisfactorily and produce anæsthesia "as quickly as can safely be done by means of chloroform." (b).

(To be Continued.)

## MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

28th September 1872.

No. 236 of 1872.—The following extract from a Military despatch from the Right Honorable the Secretary of State for India, is published :—

Para. 1. The following candidates having completed the course of instruction at the Army Medical School, and having been reported qualified, have been appointed Assistant Surgeons on the Madras Establishment, their commissions as such bearing date 30th March 1872, viz. :—

|                              |                             |
|------------------------------|-----------------------------|
| Arthur Mudge Branfoot.       | George Frederick Bevan.     |
| Christopher John McNally,    | Christopher Lloyd, M.D.     |
| M.D.                         | Andrew Francis Dobson, M.B. |
| William John Butler.         | Charles Little, M.D.        |
| William Edward Johnson, M.D. | Thomas Mayne.               |
| Thomas Vaughan Aylen.        | John Crofton Lawrenson.     |
| Stanley Locker Dobie.        |                             |

2. If accommodation be available, they will be provided with passages on board one of Her Majesty's troop ships.

3. They will be allowed to count as service for full-pay pension the period of their residence at Netley, from the 30th March 1872 to the 3rd August inclusive.

(General Orders by the Commander-in-Chief.)

### Canteens.

27th September 1872.

The following General Orders by His Excellency the Commander-in-Chief in India, is republished :—

His Excellency the Commander-in-Chief is pleased to lay down the following rules for the Canteens of Convalescent Depots, as an experimental measure, in substitution of those published in General Orders\* Nos. 42 and 220 of 1871 :—

\* Madras G. O. C. C. 26th June 1871, page 185, and 9th December 1871 page 367.

I. Until further orders, the issue of spirits in Convalescent Depot Canteens is prohibited, so soon as the supply now in store is exhausted.

II. The amount of malt liquor to be allowed to a convalescent will in future be determined by the Medical Officer in charge.

III. A report from the Senior Medical Officer on the result of this change will be submitted to Army Head Quarters, by the Commandant of each Depot, at the end of the present year.

### Hospital Furniture.

No. 1002 of 1872.—ADDENDUM.—In the scale of hospital equipment for European regimental hospitals, published in G. O. No. 830\* of 22nd September 1871, under the head of "Hospital Furniture," after "Chisel" add *Clocks, American—one for each regimental hospital.*

Order Books to be corrected accordingly.

### Furlough Rules—Warrant Officers.

No. 84.

2nd October 1872.

The Commander-in-Chief requests the attention of Heads of Corps and Departments to which Warrant Officers are attached to para. 2 of G. O., No. 888, dated 23rd August 1872, re-published in G. O. G., No. 212, dated 31st August 1872, page 164, which requires Warrant Officers to elect the Furlough Rules they desire to abide by, and His Excellency directs that all applications for leave for Warrant Officers holding that rank on this date shall be supported by a statement showing the Furlough Rules they have elected.

### Leave—Passages.

No. 182.

11th October 1872.

Under instructions from Government, the Commander-in-Chief is pleased to notify that officers returning to India from leave to Europe, who take their passages by private steamers, or steamers not under contract to Government, do so at their own risk in respect to forfeiture of pay, service, or appointment, should they fail to arrive on or before the expiration of their furlough.

\* Madras G. O. G., No. 241, dated 6th October 1871.

### Railways—Passage—Transport.

No. 195.

With reference to the General Orders cited in the margin it is notified for general information that a *return passage* by railway is authorized for all native commissioned and non-commissioned officers, soldiers and native doctors, who may have proceeded to their homes on leave on medical certificate.

2. Para. 138, Transport Regulations, Part II., will accordingly read as follows:—

"The indulgence of a free conveyance, with return passage, is allowed to all native commissioned officers and soldiers of the native army, as well as to native doctors attached to corps, when travelling from station to station by railway on medical certificate, whether in the presidency to which they may belong or beyond its limits: a free passage by rail is also allowed to any of the above grades who may be invalided or discharged with gratuity as physically unfit for further service, when such mode of conveyance is available on their homeward routes."

### MADRAS MEDICAL FUND.

#### Retirement.

Surgeon Major H. T. W. Harper, from 8th August 1872.

FORT ST. GEORGE, }  
1st November, 1872.

## List of Children.

On account of whom Payments have been notified by the receipt of Paymaster's Statements, &c., from 1st October up to this date for securing the following rates of pension.

| Names of Subscribers. | Children's date of birth. | Sex. | Rates of Pension secured. | To what period. | Payments how made.            |
|-----------------------|---------------------------|------|---------------------------|-----------------|-------------------------------|
| E. E. Lloyd           | 29th August 1872.         | Male | Full                      | To 18 years     | By Donation.                  |
| T. Lowe               | 14th Sept. 1872           | Male | Full                      | To 18 years     | By Donation and Subscription. |

MEDICAL FUND OFFICE,  
FORT ST. GEORGE,  
31st October 1872.

## CORRESPONDENCE.

## A NEW MEDICAL FUND.

To the Editor of the Madras Medical Journal.

SIR,—Will you kindly find a place for the following in your next issue.

In your last month's number I read with a great deal of interest, a very good letter from "Junior." Any one who has read the same, will, I am sure, agree with me, that we have remained quiet too long, and that it is high time, as he shows us, that we should be "up and doing." What is to be done will have to be done by ourselves, and if our endeavours have a successful issue, we shall be able to claim the credit. When I think of the time that has been wasted, of the six years that have been allowed to pass away without our making a struggle, I feel that we have been guilty of a great want of energy, and have thereby rendered what we want more difficult to get. But better late than never. With "Junior's" letter before us as a stimulus, let us at once ask for that which ought to have been given us as our right. What we want is a fund, and why we have not one, is a question that must be answered by the powers that be. We may rest assured that the way to get a fund is not to sit down quietly and wait until one comes, but to commence at once and see what we can do for ourselves. Some time since there was a talk of a combined fund for the Staff Corps, Medical and Clerical professions; it was talked of, and written about, but there the matter ended. Probably it is under consideration now, but we all know that subjects like these are eggs which require a very long incubation before they produce anything; so that after the stereotyped delay, usual in these cases, of three or four years, there is just a bare possibility of our hearing something about it; and even then, perhaps, nothing very much to our advantage. There is one point, that we must bear in mind, and that is, we must work collectively and not individually. Our present Inspector-General we all know is ready and willing to help us; so that if we unite together with one spirit, work with one energy, and speak our right with one voice, we cannot fail to secure what would be the greatest boon to our service.

ANOTHER JUNIOR.

## WATER ANALYSIS.

To the Editor of the Madras Medical Journal.

SIR,—When I first took upon myself to make a stand against the sensational hygienic chemistry which threatens to overwhelm sanitary science in India, I was fully aware that such a course would bring down on me no small amount of opposition, even of obloquy. Every one who attacks an abuse must expect vigorous resistance not un-mixed with indignation. I am not, therefore, surprised to find myself charged with doing my best to injure the professional reputation of a brother medical officer. I need hardly say that such is not the fact. Nothing has ever been said by me impugning the professional reputation of Dr. Macnamara; but when he steps out of his profession to compile bad chemical schemes, I do not hesitate to speak in defence of chemistry either at home or in India.

But I own to some surprise when I find Dr. Macnamara slips out of the position he took in the following sentences of his reply. "I, for my part, am quite content that the scheme, or Mr. Nicholson's critique, should stand or fall by the truth, or otherwise, of the particular statement which he pronounces 'a gross inaccuracy,' and I shall proceed to show that this statement is in fact quite correct \* \* \* \* But if the alkaline sulphates are present in only small amount, this conversion may be more conveniently brought about by the addition of chloride of ammonium to the solution, for on evaporation and subsequent ignition, the ammonium carries off the sulphuric acid, leaving the chlorine in combination as chloride of sodium or of potassium. But Mr. Nicholson utterly denies this statement. He pours scorn upon it, and states that any one can convince himself by a simple experiment that it is an erroneous one."

In my *rejoinder* I showed that the statement was "a gross inaccuracy," for in the residue from which all the sulphuric acid should have been expelled, this constituent can actually be determined more accurately than in the original water. I gave experiments on a water and on pure salts. but Dr. Macnamara slips out of his position on the pretext of a slight correction which I made in my comment, in order that it should be perfectly accurate, the correction having no bearing on the general tenor of my objection. I protest against this evasion of the penalty to which Dr. Macnamara

offered to submit in case his statement was found to be otherwise than the truth.

I will now briefly notice a few statements made in Dr. Macnamara's letter.

1st—"And in the first place I can assure him that I have not been unmindful of marine impregnation as a source of impurity in the fort waters—this he will see if he will refer to my reports on the tanks on the glacis in which I have distinctly recognized the liability to such impregnation."

I have most carefully examined the reports, yet the only trace I can find of such recognition is in the case of a tank at Barrackpore (not at Fort William). "It is possible that this tank may communicate through the soil with the river." But I was speaking, not of more or less direct admixture of tidal water, but of brackishness derived from marine deposits in the soil. All through Dr. Macnamara's reports there is not the slightest recognition of the fact that large tracts of land, even hundreds of miles from the sea, contain deposits of marine salts and impregnate the subsoil water with them. This saline impurity when obvious is invariably ascribed by Dr. Macnamara to the innate depravity of the native character (his *locum tenens* elegantly remarks of Allyghur water, nearly identical with that of the Seven Wells, drunk for years by the troops in Fort St. George, "the curse of Babshakeh has fallen on the consumers of this water").

2nd.—Dr. Macnamara then proceeds to say that I have deliberately misrepresented him by saying that he condemns every Indian water that happens to have nitric acid in it, and he gives what are, apparently, good proofs of my statement being too sweeping. A little attention will, however, show that the quotations, far from being Dr. Macnamara's own opinions, are compilations of the analyst's opinions, and that the exceptions only happen when, an analyst having proved that nitrates exist normally in the soil, Dr. Macnamara has been unable to avoid passing as good waters which he would, I maintain, have certainly condemned if he could have done so without offending the analyst. For instance, at Nowgong the European Infantry wells escape owing to the analyst's representation that nitrates are normal to the soil of the cantonment, but the Native Infantry wells are made the scapegoats and are condemned; "the analysis undoubtedly indicates sewage pollution." The only difference between the water of the E. I. wells and that of the N. I. wells being that the latter contained a little more sodium chloride

whilst in both cases the amounts of organic and nitric acid and the general composition were near

Again, at Jubbulpore, well No. 118, Dr. Macnamara takes credit for praising a water as very good although it contained nitric acid. Now this well is thus remarked on by the analyst: "it contains very drinkable soft water," and the analysis shows that the mineral solids amount to only 5.5 grs. per gallon, of which 4.54 grs. are accounted for without reckoning nitrates or sulphates; I can fully imagine that Dr. Macnamara could hardly avoid perceiving that there was not much room left for nitric acid, and that it would be too ridiculous to condemn a well water which is, with one single exception, the purest in all Bengal. In all the cases brought forward by Dr. Macnamara, I fail to find one in which he has, of his own movement, passed as good a water containing nitric acid in any quantity above that vaguely known as 'traces'; his opinion is that "nitric acid has been well called fossil organic matter, but it is a fossil which may be of very recent formation." I adhere to all I have said, and deny having misrepresented Dr. Macnamara in any way.

I am, &c.,

EDWARD NICHOLSON.

CUTTACK,  
19th October 1872.

### TO CORRESPONDENTS.

Surgeon W. STEWART, 2-21st Fusiliers.—*In our next.*  
Assistant Surgeon L. C. NANNEY.  
The Inspector General I. M. D.—*Received with thanks.*

### BOOKS, &c., RECEIVED.

The Doctor, September 1st.  
Medical Record, August 15th, September 1st.  
Medical Press and Circular, September 11th, 18th, 25th.  
Journal des Connaissances Médicales, September 15th.

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## THE MADRAS MONTHLY JOURNAL OF MEDICAL SCIENCE.

No. XXXVI.—DECEMBER, 1872.

### ORIGINAL ESSAYS.

ART. XXV.—*Some important points in the Treatment, Nursing and Management of patients suffering from Hepatic Disease.* By Surgeon W. STEWART, M. D., H. M.'s 21st Fusiliers.

SINCE the commencement of the Chloride of Ammonium treatment of hepatic diseases, as advocated by me in the columns of this journal, numerous cases of hepatitis and of hepatic abscess have been published in illustration. I propose in this place giving a few cases of simple enlargement of the liver, so as to illustrate the special action of the medicine—the subject of my last paper.

In cases of congestion of the liver (simple enlargement) the special action is most marked. In cirrhosis on the contrary, and the chronic enlargement of the liver, so often met with in those who have resided long in India, the special symptoms of the drug are but slightly manifested, if at all; and this remark, I think, will be found to apply more particularly to cirrhosis.†

\* Madras Journal of Medical Science for February and March 1872.

† I have had but little experience in the use of the drug in cirrhosis; but in the case of a female suffering from the disease, much comfort was afforded, and the fatal progress was apparently prolonged under the use of the medicine.

As this communication will probably be the last I may have an opportunity of making on this subject, as my Battalion is about to leave this country for England, I may be permitted to state generally the result of the treatment in the hospital of the 2-21st Fusiliers. It is now a little more than three years since the treatment was first commenced, and during that period the Chloride of Ammonium has been employed in the treatment of 153 cases of hepatic disease, as under :—

*Hospital, 2-21st Fusiliers.*

| Disease.                            | Admitted. | Discharged. | Died. |
|-------------------------------------|-----------|-------------|-------|
| Simple enlargement of the Liver ... | 33        | 33          | ..... |
| Hepatitis ...                       | 104       | 104         | ..... |
| Abscess of the Liver ...            | 16        | 16          | ..... |
| Total ...                           | 153       | 153         | None. |

The average annual number of deaths at head-quarters from abscess of the liver during the four preceding years (1865-68) was 6.75, the average annual number of hepatic cases for the same period being 59. Having shown the result of the treatment by Chloride of Ammonium, as compared with that formerly adopted in the hospital under my charge, I have now to point out what I conceive to be the chief reason why an equal measure of success has not been obtained in the practice of others : and first I would take leave to remark that from communications received from medical officers of my acquaintance serving at different stations throughout India, and from conversations with some of my friends who are in the habit of using the Chloride of Ammonium, it is quite evident that one of the essentials to success, viz.—*absolute rest in bed in the recumbent posture, during the whole course of the disease*, is either entirely neglected or else not strictly enforced. In my pamphlet and other published papers, I dwelt as I thought fully and explicitly on this point, as one, without attention to which

all our efforts would be hopeless ; and I pointed out the immediate danger to life from allowing weakly patients suffering from hepatic abscess to quit their beds, to sit up in chairs, go to the night stool, &c.

Since then, several instances have come to my knowledge of patients suffering from abscess of the liver who have met their death in this manner, either while sitting in the chair or on the night stool ; or else, the fatal result has been brought about, if less suddenly, yet quite as certainly, from rupture of the abscess into the peritoneal cavity from the same cause, and in this latter case the circumstance is apt to be overlooked and not enquired into, unless the patient should think of mentioning it by alluding to something having “cracked” or “given way” in his side, while sitting up, moving about, or while on the night stool, &c.

But even in fatal cases in which the Chloride of Ammonium had been used without attention to this important rule, (a rule which I hold to be absolutely necessary for success), and in which the treatment had been commenced in time to admit of the probability of success being obtained, it has been observed by those who have communicated with me on the subject, that the progress to the fatal issue was smoothed and prolonged by the long-continued use of the Chloride of Ammonium, and the *post-mortem* examination of such cases has revealed the liver tissue surrounding the abscess cavity in a healthy state, of natural colour and consistence, free from congestion or other morbid appearance, and unlike that commonly found surrounding the cavities of hepatic abscesses.

With regard to the important rule of absolute rest in bed, the greatest difficulty will be experienced in getting all concerned to carry it out effectually ; and nothing but unrelaxing care and attention on the part of the prescriber, and the medical subordinates and orderlies in charge of the patient, will suffice to effect it ; for, as a rule, patients suffering from hepatitis or the graver forms of hepatic disease, are peevish and wayward, and in this, as in matters of diet, &c., the greatest difficulty is experienced in their management.

In serious cases I am in the habit of having two men daily from the ranks to take it turn about (every two hours) to remain with the patient ; and written instructions are read to these men when coming on duty by the Hospital Serjeant, in which, the necessity of preventing the patient quitting his bed, or even moving suddenly in it for any

purpose whatever, is enforced. The patient is not even permitted to quit his bed for the purpose of changing sheets or having the bed made; but when such changes are necessary, another cot is provided, with clean bedding, &c., on which he is gently moved in the horizontal position by the attendant, a bed-pan and urinal being kept constantly at hand for his use.

In all my remarks on the treatment of hepatitis and hepatic abscess hitherto made, I have taken it for granted that—with all the confused difficulties at times surrounding the diagnosis—the latter has been made sufficiently early to justify a reasonable prospect of success from the treatment; but that the further element for success is oftentimes wanting, every one who has had much Indian experience will be free to admit. In the Departmental blue book for 1869, there is a very instructive paper by Dr. Adams, on the mistakes liable to be made in the diagnosis of hepatic disease, which is well worth careful perusal. Some time ago two cases, exemplifying the liability to error in the early and remediable stage of hepatic disease, came to my knowledge. Both occurred in the persons of natives, and in both, the patients were supposed to be suffering from Inter-mittent fever. One, whom I was asked to see in consultation, had been ill for about a month before the true nature of the disease was suspected. He was then suffering from hectic fever, and the liver formed a tumor occupying the greater part of the right side of the chest and abdomen, extending into the left hypochondrium. Chloride of Ammonium was now prescribed with the necessary precautions, but without the slightest hope of its doing more than palliating the patient's sufferings.

Death took place in two or three days afterwards, and the *post-mortem* examination revealed the existence of an enormous abscess, of which the containing cysts and compressed liver tissue were only about two lines in thickness. Suppurative hepatitis is rare in natives compared with Europeans, and there is on that account in them a greater chance of the disease being overlooked. The fact is, that in the treatment of tropical diseases of whatever kind, it is just as necessary, if we wish to avoid errors, to make frequent and searching examinations of the hepatic region as to feel the pulse, or look at the patient's tongue.

That the readers of this Journal may be placed in full possession of all the points in the treatment which I deem

necessary for success, and by which success is attainable, I believe, even in the most serious cases, if the disease be promptly diagnosed, I will conclude these remarks with the following summary of the treatment from a paper of mine published in the *Indian Medical Gazette* for August and September 1872.

#### *Recapitulation of the Treatment of Hepatic Disease with Chloride of Ammonium.*

*Primary Acute Hepatitis.*—In the early stage, should there be no accompanying diarrhoea, a mild purgative may be administered at the commencement, with a view of clearing out the *prince via*. If there be diarrhoea, the patient passing frequent, loose, and bilious motions, a pill composed of mercury pill grs. ii., Dover's powder grs. iii., repeated every two hours till four or five have been taken, will be found the most effectual means of checking it without the risk of setting up gastro-intestinal irritation. Afterwards, saline diaphoretics and diuretics, in frequently repeated small doses, should be administered till their action is well established. I have found a mixture containing liquor ammenia acet. ℥ii., with tinct. hyoscyam. ℥v. in each dose, administered every half hour or hour, to give most relief, inducing free action of the skin, allaying the feverish symptoms and calming the nervous system; and the administration of from ℥ss. to ℥i. of tinct. hyoscyam. at bed time, after the repeated small doses during the day, will often have the effect of inducing a little refreshing sleep—a point of great importance in this disease. Fomentations or bran poultices applied to the seat of pain in the right hypochondrium will afford much relief, and should be continued as long as they relieve the pain, and repeated from time to time on its recurrence. In some instances the application of six or eight leeches to the chief seat of pain, when this is severe and attended with much tenderness, and the patient is not reduced, may be necessitated; but in general even this amount of local depletion is not required.

The diet should at this time consist of arrowroot, sago, milk, and water; barley water may be taken freely (as a drink, to assist the operation of the diaphoretic), and afterwards beef tea may be allowed.

As soon as the symptoms, local and general, shall have abated, and diaphoresis been freely established by the above

means, the chloride of ammonium should be commenced in doses of grs. xx. twice or thrice daily, and persistently administered till its characteristic and special action be no longer manifested. On the cessation of its sensible action, should liver enlargement, with feeling of stiffness, weight, or other uneasiness continue, it may be administered in small doses (v. to x. grs.), thrice daily, for some time afterwards with beneficial results.

During the whole of this time the patient should be kept in bed, for it must be borne in mind that the condition of an inflamed liver is not unlike that of an inflamed joint, demanding strict quiescence in the recumbent posture; and therefore a steady and intelligent attendant should constantly wait on the patient in all acute and severe cases, and the bed-pan and urinal should at all times be at hand, so that the patient may not have the least occasion to quit his bed. It must also be borne in mind, as pointed out by Morehead, that the complete restoration of the inflamed portion or portions of the liver is not coincident with the cessation of febrile symptoms and local sense of pain and symptoms referable to the affected part; in fact, recovery must be considered incomplete till several days have elapsed from the cessation of the pain and febrile disturbance, during which time the patient should still be confined to his bed and carefully watched, so as to guard against relapse. By these means, in the majority of cases, a speedy and effectual cure by resolution will be effected.

*Treatment of Abscess of the Liver.*—In military practice, it frequently happens that hepatitis does not come under treatment till the peculiar symptoms pointing to abscess, either impending or already formed, are manifested; or it may occasionally happen that in consequence of bad diathesis, advanced stage, or other cause, recovery by resolution does not take place under treatment, suppuration occurs, and hepatic abscess is formed. It is necessary to detect this event promptly, because it calls for a line of treatment different from that of the antecedent stage. The diet should consist of light puddings, broths or animal jellies, and wine may be cautiously administered, if it does not excite the pulse or produce irritation of the gastro-intestinal surfaces; but no solid food should be allowed.

If the hectic fever arising in this stage of the disease be attended with colliquative sweating, the chloride of ammonium should be commenced, at once, in doses of grs. xx.

303

twice or thrice daily, and persistently administered till it no longer produces sensible action, and all symptoms of hectic have disappeared; and during convalescence and when hepatic pain and uneasiness have completely subsided, it may be given in smaller doses for some time longer. Should the irritative or hectic fever be attended with a hot and dry state of the skin, the preliminary treatment recommended in the early stage of acute hepatitis should be had recourse to—the diaphoretic mixture with hyoseyamus; and to relieve the local pain, fomentations or hot bran should be applied to the affected part. A moist state of the skin having been induced, no time should be lost in commencing the administration of the chloride of ammonium as before directed.

In simple acute hepatitis, rest in bed and strict quiescence in the recumbent posture is absolutely necessary for the perfect and speedy recovery of the patient; but when abscess of the liver has resulted, the patient who is permitted to leave his bed, or even move about in bed, is exposed to a greater danger than the mere recrudescence of inflammatory action, which inevitably results from inattention to this important rule. He runs the risk of rupturing the wall of the abscess (which may be making its way by one of the usual channels) before adhesive inflammation has taken place between the opposite surfaces of the peritoneum—an occurrence which would inevitably lead to a fatal result.

*Treatment of simple enlargement of Liver.*—In simple enlargement of the liver, the chloride may be given in doses of from grs. xv. to grs. xx. twice or thrice daily, according to circumstances, with careful attention to diet and rest in the recumbent position; and it is to be carefully noted, that, in whatever form of hepatic disease the medicine is administered, it should not be given while the skin is hot and dry: indeed, in all cases it is better that it be preceded for a day or more, according to circumstances, by some simple saline diaphoretic (the liquor amon. acet. mixture above-mentioned); or if the skin be very hot with high fever, temperature perhaps 103° to 104°, a sixteenth of a grain of ant. tart. may be given every three or four hours with the same intention.

*Chronic Hepatitis.*—Cases of chronic hepatitis with enlargement of liver, from long residence in India and repeated attacks of acute hepatitis, are benefited, and the liver enlargement reduced in a remarkable manner, by the adminis-

tration of chloride of ammonium in doses of grs. x. to grs. xx. twice or thrice daily according to the general principles already laid down, varied, of course, according to circumstances in individual cases.

*Case of simple enlargement of the Liver treated with Chloride of Ammonium.*

Private O'D. ——— was admitted at Thayetmyo on the 24th June 1871 complaining of pain in the situation of the twelfth rib of right side and inability to lie on the left side, on account of a dragging pain in right hypochondrium experienced in that posture. The latter symptoms had been present for a week or more previous to admission. No pyrexia; pulse and respiration normal. On inspection a prominence of the right side of chest extending from the angle of the ninth rib downwards was apparent. The liver was enlarged, hepatic dulness extending in the right mammary line about an inch beneath the costal cartilages. In the epigastrium the area of hepatic dulness was also increased. The right side of the chest, at the level of the ensiform cartilage, measured eighteen inches and one-eighth; the left sixteen inches and three quarters, being a difference of one inch and three-eighths, or two inches and three-eighths more than normal, the patient being left-handed. The patient is much emaciated, and his muscular development is poor, but the left arm over the biceps is one-eighth of an inch larger than the right.

Bran fomentations were ordered to the seat of pain in the side and a podophyllin pill as the bowels were confined. As there was no pyrexia the Chloride of Ammonium was commenced on the following day (25th) in twenty grain doses thrice daily.

June 26th.—The medicine acted characteristically in relieving the pain, and inducing perspiration with the usual special symptoms; he can now lie on the left side without uneasiness, and pressure can be borne over the 12th rib, where before there was pain and tenderness. The prominence at the posterior part of bone of right thorax is almost gone. Cont. the Amm. Chl.; Beef tea diet; one pint of beef tea extra.

June 28th.—Pain and uneasiness completely gone. Ammon. Chl. grs. v. thrice daily.

July 1st.—Doing well; continue medicine. Low pudding diet.

July 3rd.—Omit the Chloride; and to have Quassia and Iron mixture as he is anemic; diet as before.

July 5th.—Discharged; to attend hospital a few days.

*Case of simple enlargement of the Liver, illustrating some of the more unusual special symptoms produced by the Chloride of Ammonium in Hepatic disease.*

Lance Corporal J. R. ———, a stout, plethoric man, of fairly temperate habits, was admitted to hospital on the 23rd September 1871, complaining of fulness and sense of distension in the epigastrium, and pain and uneasiness about half an hour after taking food. During his service in various parts of India and Bunnah has had nine admissions to hospital with dysentery; three, hepatitis; three hæmorrhoids; and several times with dyspepsia. For three months or so previous to admission suffered from dyspepsia, morning sickness and vomiting, and used frequently to vomit his food after taking meals; complained also of sensation of "smothering" when lying on his left side—the easiest position being on the back. Skin cool; pulse quiet.

On examination considerable fulness is perceptible in the epigastric region, where there is also tenderness on pressure and increased area of hepatic dulness. Was ordered twenty grains of Chloride of Ammonium twice daily. Beef tea diet; one pint of milk and one pint of corn flour.

September 24th.—States that from two to three minutes after the dose of the medicine yesterday evening a sensation of "two cold narrow streaks" started off right and left from the tip of the ensiform cartilage, and coursed along the margins of the false ribs on either side, until they reached a point about an inch outside of lines let fall from the nipples. Thence "the cold streaks" extended down the thighs in the central line as far as the centre of each patella. The sensation of cold moved along about as quickly as a painter would draw his brush in graining; and when the knees were reached, the legs beyond became hot and broke out in perspiration, which thence extended all over the body; the perspiration was profuse and lasted about an hour. After this, the sensation of weight and suffocation, which formerly pre-

vented his lying on his left side, was greatly relieved. Continue treatment and diet.

25th.—Yesterday, two minutes after taking the morning dose, "a cold streak" (this time single and of greater breadth) spread over the left side of the abdomen as far down as the pubis and afterwards all over the abdomen. The perspiration which followed was not so great as before. Could now lie on left side with ease; but was cautioned against doing so. Continue medicine and diet.

26th.—The medicine yesterday was only followed by a sensation of cold, this time stopping just half way between the umbilicus and pubis.

27th.—Medicine has now no sensible effect; enlargement in epigastric region gone. Ammon. Chlor. grs. viii. thrice daily.

29th.—Discharged well.

*Case of Simple enlargement of the Liver treated with Chloride of Ammonium.*

Private J. M. — was admitted into the Regimental Hospital, Thayetmyo, on the 16th September 1871, complaining of pain in the right hypochondrium, where there was also tenderness on pressure. Patient was slightly feverish, probably the result of intemperance. For the previous four or five days had a "stitch" in the right side, which was first felt on parade on bringing his rifle to "the shoulder." Accompanying this was a sympathetic pain in the right shoulder. Two days afterwards the pain, which was at first but slight in the right shoulder, became more severe, as well as that in the right side, and he suffered from headache and alternate flushes of heat and cold; when he turned on the left side, a sensation of weight and dragging was experienced in the right hypochondrium. The area of hepatic dulness was slightly increased, and there was some tenderness on pressure beneath the margins of the right costal cartilages. To have diaphoretic mixture with Tinct. Hyoscyamus every two hours.

17th September.—No pyrexia, felt a few stabbing pains in the side this morning. The skin being moist and prepared for the action of the Chloride, to have grains xx. Chloride of Ammonium morning and evening and to observe its effects. Beef tea diet.

18th.—Patient states, that about a quarter of an hour after taking the medicine yesterday, he felt a curious sensa-

tion as if the drug were working from one side of the chest to the opposite (one hypochondrium to the other across the epigastrium); he compares it to the sensation of water running across. Then immediately beneath the right false ribs in the right mammary line, a sensation as if pins and needles were going in and out at that point. This was accompanied by a pulling downwards at the same point which lasted from eight to ten minutes (the sensation of picking remaining for a part of that time), and when the latter ceased, the stabbing pain which the patient formerly experienced was entirely removed. While all this was going on (during the ten minutes above alluded to) towards the outer edge of the right rectus abdominis immediately beneath the costal arch, a pulsation as if of a working out and in of a muscle went on; but he had not the curiosity to feel the part to ascertain if the movement was communicated to the surface. Continue treatment.

19th.—Pain of side and sense of weight much relieved and there is less tenderness on pressure. Sensible action of the medicine not so marked; a sensation of pricking and heat in the right hypochondrium is only experienced, lasting for about ten minutes after the exhibition of the dose, followed by warmth and perspiration over the entire surface. Continue diet and treatment.

22nd.—Sensible action of medicine has ceased and with it pain and uneasiness of side. Patient can now lie on left side without discomfort. Chloride of Ammonium grains xv. twice daily. Beef tea diet one pint. Beef tea and one pint milk as extra.

28th.—On the 26th as the patient had a slight febrile paroxysm of malarial origin owing to the cessation of the rains and the fall of the river, he was ordered Quinine grains two daily and the Chloride of Ammonium was omitted. Since then the fever has not returned, and patient is permitted to sit up for the first time. Half diet.

30th.—Discharged.

*Case of simple enlargement of the Liver complicated with Bronchitis, treated with Chloride of Ammonium.*

Private R. A. — was admitted to the Regimental Hospital, Thayetmyo, on the 19th September 1871, complaining of pain in chest and cough, attended with slight

pyrexia. Diaphoretic mixture with small doses of Tinct. Hyoscyamus was prescribed.

On the 20th the chest symptoms being troublesome the treatment was continued. An examination of the hepatic region, however, disclosed the liver to be slightly enlarged, and on interrogating the patient, the symptoms expressive of hepatic congestion were elicited. He had lost appetite and had a sensation of weight and dragging in the right hypochondrium, where there was tenderness on pressure. As the diaphoretic prescribed had induced free action of the skin, and as the chest symptoms were probably depending in great part on the pressure exercised by the enlargement upwards of the right lobe of the liver, the patient was ordered grains xx. of Chloride of Ammonium, and to observe its effects from the moment of taking the dose.

September 21st.—Patient states that about half an hour after taking the dose yesterday evening, he felt the medicine "searching about" from the upper third of the sternum to within three inches of the umbilicus in the median line. When the "working" had lasted about a quarter of an hour, a sensation of pricking was experienced at the ensiform cartilage, thence along the inferior margins of right costal cartilages to a point about an inch on the inner side of right mammary line. The sensation experienced was as if a succession of shocks were going backwards and forwards between the above points. At the same time he began to perspire and experienced a sensation of warmth and comfort. Continue the chloride morning and evening and to have a dose of cough mixture at noon. Tea diet: two pints of milk and one pint of beef tea.

22nd.—Hepatic pain and uneasiness much relieved, chest symptoms less troublesome. Continue the Chloride of Ammonium.

23rd.—Special effect of the medicine no longer experienced, but each dose is still followed by perspiration and feeling of comfort.

24th.—Doing well. Chloride of Ammonium grs. xv. twice daily, diet as before.

26th.—Countenance clear and bright, hepatic pain and uneasiness quite gone. Respiratory movements natural. Continue treatment.

30th.—Discharged.

ART. XXVI.—*Fever, its theory and treatment.* (By ASSISTANT SURGEON L. C. NANNEY, H. M.'s 3rd Regiment, P.L.I., Secunderabad.)

THE pathology of fever has, throughout all ages, been a subject of much discussion amongst scientific men, but little advance seems to have been made in elucidating the obscure causes of this disease.

There are two methods by which scientific discovery may be carried on, the Theoretic and the Practical; the former ingenious, brilliant, and seductive, but dangerous, unless controlled by the latter, which consists of series of careful observations and experiments. In too many cases the theory is not deduced from observation, but first arbitrarily formed, and facts too frequently misrepresented to support it.

The result has been, in many instances, that various ingenious theories, after holding ground but for a short period, have eventually proved fallacious, and have been superseded by others no less transitory in their duration; until, in our theories of Fever, for example, dissatisfied with all modern hypothesis, we return to those of Hippocrates and Galen.

The theory of the former, as revived and revised by Liebig, has become the most popular theory of the day, nor are the views of Galen now considered obsolete.

Valuable as theory may be, in indicating a safe track towards the detection of efficient causes, in guiding us in our choice of things to be observed, and as a frame-work which binds together the mass of various experiments and observations; still, it is on these latter that we must depend for the accuracy and reality of our knowledge; nor must we hesitate to abandon the theory, so soon as it ceases to be fully borne out by the facts, elucidated during the course of the investigation. While but few are capable of starting an able theory, all may aid by so amassing and arranging facts as to afford ample material for the formation of satisfactory conclusions.

Dr. Holland observes, in his Medical notes and reflections, "a very especial advantage has been the application of numerical methods and averages to the history of disease; thereby giving it the same progress and certainty which belong to statistical enquiry on other subjects. Averages may, in some sort, be termed the Mathematics of Medical Science. Through Medical statistics lies the most secure path into the philosophy of Medicine."

In reference to which passage Sir John Herschel remarks, as follows;—"The comparison of multitude with multitude, the destruction of errors by mutual collision, and the slow emergence of truth from the conflict by its outstanding vitality, belong to a maturer age of science than that in which medicine had its origin or attained its present importance."

In the arrangement of the facts amassed during the course of our observations, we cannot do better than bear in mind the five ways, mentioned by Herschel, in which facts may be rendered, by the unskillful employment of them, even "more fallacious than theories."

"1. By 'having preconceived ideas of the final result.'

"2. By 'neglecting the numbers which contradict the result they wish to obtain.'

"3. By 'incompletely enumerating causes, and only attributing to one cause what belongs to a concourse or many.'

"4. By 'comparing elements which are not comparable.'

"5. By 'singling out the extreme partial results which tell on the side to be defended and ignoring all the rest.'"

The theory of Hippocrates, as revised by Liebig, supposes, that a septic poison, of animal or vegetable origin, or both, is taken into the blood, producing changes in the whole mass of the blood, and propagating itself by, what he terms, a *quasi* fermentative process, and then, after a somewhat definite period of incubation or latent period of contagion during which these changes are occurring, fever is set up as an eliminative action, the various eruptions and critical discharges being also purely eliminatory.

Taking then this theory as a guide in the direction of our observations, let us consider how far our own experience tends to confirm or confute it.

In some cases of endemic fever, local causes have been assigned to which a great appearance of probability attaches itself, as in the case of marshy ground, or the vicinity of dense jungle, where the unhealthiness of the situation is self-evident; but where various causes combine to produce the peculiar condition favorable to the development of this disease, it is more difficult to detect its true origin.

In such cases careful observation alone, and comparison of facts with the results of the investigations of others, and the study of the history of corresponding epidemics, where the local causes were analogous, may guide us in forming an opinion, and ultimately lead to the unravelling of the mystery.

In a case where several agencies are, with apparently equal probability, pointed out as the cause of fever, circumstances might lead us to direct our attention to one special agent which we should suppose to exert a more powerful influence than the rest; and also to be increasing in importance, if we observed that the type of the disease, which had been for years endemic at certain seasons, appeared to be changing in character, assuming a more severe form, thus indicating the prominence of the more powerful amongst the causes formerly assigned. Thus in the year 1870 the fever endemic during the rainy season in the Native Infantry Lines, situated to the south of the station of Secunderabad, is described as a mild intermittent, characterized by the absence of symptoms indicating a malarial origin, and seldom requiring the use of quinine. In 1871 the same type of fever prevailed to a very large extent, this at the time appeared attributable to the fact of the Regiment (3rd L. I., the 4th N. I. having occupied the Lines in 1870) having newly arrived in Secunderabad, after long tours of service in stations such as Cannanore, Tonghoo, and Madras, and being consequently in an enfeebled condition, unacclimatized, and susceptible to the slightest influences. In the present year (1872) the fever has again made its appearance, but not, as might have been expected, to a less extent, nor has a year's acclimatization had any effect in diminishing its force. On the contrary the numbers have excessively augmented, from 170 the maximum of 1871, to 257, and although resembling it in some of its features at the onset, it has assumed a severer form, being somewhat remittent in character and attended more frequently by complications of dysentery, diarrhoea and paralysis, and speedily followed by greater depression and nervous exhaustion, than was observed in the cases generally treated last year. This fact appears to negative the presumption that the increased rate of fever in 1871 was due wholly to the unacclimatized condition of the men. Had such been the case, it might have been expected that the fever rate would have diminished yearly, as the men become more habituated to the climate; this actually occurred in the 4th Regiment, in which the rate of sickness decreased in regular ratio.

|           |       |
|-----------|-------|
| 1866..... | 1,128 |
| 1867..... | 740   |
| 1868..... | 679   |
| 1869..... | 327   |
| 1870..... | 214   |

Fever also attacked some of the officers who had not suffered in the previous year, and one and all stated that it left them in a weaker and more debilitated condition than any previous fever which they had experienced. One in particular, who had spent three years in Shwegyeen, complained of even greater exhaustion in this case, and I observed that patients presented a very anæmic and asthenic appearance. As far as I can judge, after careful inquiry and investigation, the causes of sickness seem to operate most powerfully in these and the adjoining Cavalry Lines, which would apparently indicate the unhealthy source to proceed from this quarter. I have noticed that when heavy rain falls in these Lines, it usually gathers up in the direction in which the city of Hyderabad lies, and that when very wet here, it is frequently fair in other parts of the cantonment, and *vice versa*, the rain-fall being unequally diffused through the station. Also, that dense fogs rise from the same quarter and advance steadily in this direction, filling the hollows in the undulating ground on which the Lines are built, and enveloping the whole vicinity in masses of oppressive vapour, doubtless a sufficient vehicle for the transmission of any malaria with which it may meet in its onward progress. On referring to Dr. Maclean's able article on Fevers in *Reynold's Medicine*, Volume I, page 73, I find the following passage:—

“From the malarial quarters of that densely populated and most unsanitary city (Hyderabad in the Deccan) I used to receive into the Residency Hospital, during the autumnal months, a number of cases of this kind, presenting from the first, signs of great depression, the fever after the second or third exacerbation becoming almost continued, the skin being yellowish . . . . . the pulse exceeding 120, small and compressible . . . . . respiration, quick and sometimes irregular, the abdomen distended, the bowels loose, and a disposition to hæmorrhage from nose, mouth, and bowels and, almost invariably, delirium, with a tendency to coma. Such cases, unless energetically treated, hasten rapidly to a fatal termination by exhaustion and coma.”

I have found that the symptoms here noted agree more closely with those which have come under my observation this season than any described by other authors, whom I have consulted on the same subject.

I am indebted to the Residency Surgeon, Dr. Wyndowe, for the information that, although there is not an unusual amount of fever this year at Hyderabad, its type is more

remittent, and it is more commonly complicated with liver affections than is usual in that city, and also, in many instances, there is a typhoid tendency. These considerations incline me to the opinion that the fever prevalent this season in the Regiment under my charge, cannot be wholly ascribed to the effects of damp and wet, or to the sudden changes of temperature. These are excessive, and operate powerfully as the exciting causes in the present instance. Whether they may sufficiently account for the fevers of former seasons is beside the purpose of the present enquiry, but I am of opinion that in this case they cannot be assigned a more important position than that of secondary causes, and that the root of the disease must be traced to a deeper source. As I shall proceed to show, the symptoms indicate the absorption of a certain degree of malaria, and the treatment which I have found most efficacious points, by an inverse process, to a septic poison, for the presence of which the effects of damp and cold cannot sufficiently account.

Imbued with this belief I was strongly impressed with the idea that antiseptic remedies would prove most beneficial. I had previously given quinine in most of the cases, and was surprised to find that in a good many instances it failed to have the desired effect. There is also one great drawback in the use of quinine where cases of fever are numerous and protracted, viz., the costliness of the drug, and the difficulty of procuring it in quantities sufficient to meet the demand, which renders it very desirable that a less expensive and more easily obtainable remedy should be substituted. I had formerly tried the Alkaloids, Quinidine, Cinchonine and Cinchonidine, but was not satisfied with the results. I employed Arsenic, but, in the present instance, without benefit. I therefore commenced the administration of Carbolic Acid in those cases in which Quinine seemed to exert no influence, and finding it to succeed, even beyond my expectations, I placed a number of newly admitted cases under the same treatment from the onset, keeping a careful record of them as compared with those treated by Quinine.

I shall, next month, forward the statistics thus obtained, and some of the most important cases in full, merely remarking at present, that I found in most of the cases that after a few doses of Carbolic Acid the symptoms and general

appearance ameliorated, the pulse increased in fulness and strength, the tongue became remarkably clean, and the dry unpleasant taste in the mouth disappeared, the eyes looked brighter, and the whole aspect changed for the better. When Carbolic Acid can be substituted for Quinine, the following advantages are to be gained, the taste is sweet and rather pleasant, causing no subsequent nausea or vomiting, no derangement of the digestive system, nor the unpleasant sensation of singing in the ears and deafness, usually experienced after large doses of Quinine. It produces profuse diaphoresis, acting freely on the skin, showing that it is a powerful eliminator. It can also be given during a paroxysm, hastening on the sweating stage, and shortening the duration of the attack.

Before bringing this subject to a close I may note that several of the most important causes to which malaria has been ascribed, exist, to a certain extent, in these Lines. The subsoil consists of granite, in a crumbling disintegrated condition, the surface soil being composed chiefly of the debris of the larger rocks, in which are embedded huge boulders of a more highly crystallized granite, which being covered in patches of deep purple, grey and yellow, with a minute lichen, cannot fail to give out deleterious matter; the water in the wells percolating through this soil must also be more or less contaminated.

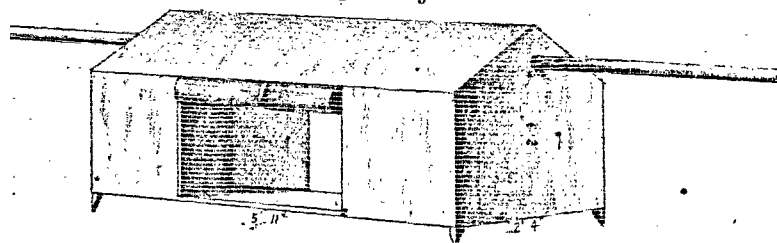
I visited the four wells by which the Lines are supplied, and, judging from their situation and appearance, it is probable that a certain amount of deleterious matter may be washed down during the rains, thereby impregnating the water with a considerable amount of impurity. The natives themselves do not consider the water good, and name it as one of the causes of their sickness.

I forwarded samples from each of the wells to the Analyst of Potable Waters, but owing to his absence the analysis must be made on a future occasion. Should the results prove of interest I shall communicate them. In addition to these local unfavorable features, these Lines are; from their situation, exposed, as I before remarked, to all noxious influences brought up by the prevailing winds, or carried by dense fogs or currents of air, being wholly unprotected by trees or belts of trees, which might serve to intercept them.

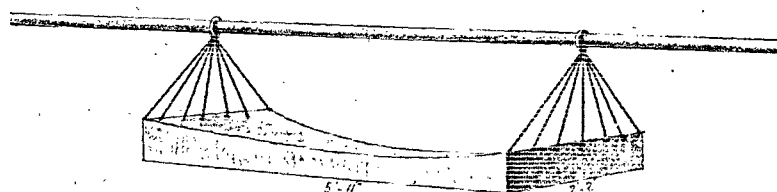
*(To be concluded.)*

## SICK CARRIAGE.

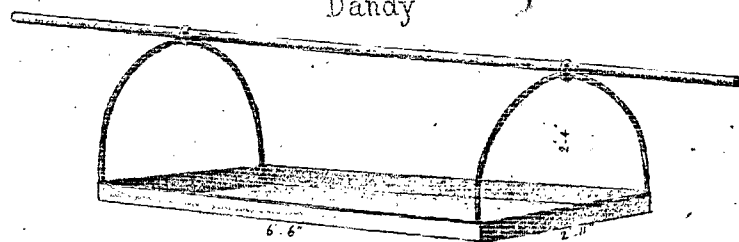
Dooley.



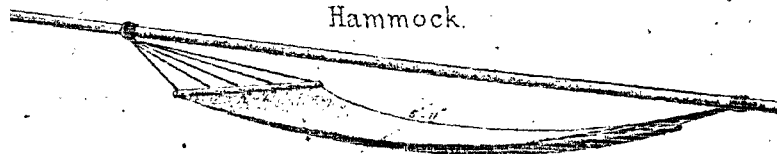
Swing Cot



Dandy



Hammock.



*Sick-Carriage employed in the Abyssinian Campaign. 427*

ART. XXVII.—Extract from the "Record of the Expedition to Abyssinia."

(Communicated by the Inspector-General J. M. D.)

## SICK CARRIAGE.

*Dhoolies.*—"The dhooly is very much used in India for the carriage of the sick. It weighs 123 lbs. It is a description of cot made of teak with cane bottom and short legs, suspended from a bamboo pole by a light iron frame-work which is covered with waterproof canvas.

"It is carried usually in India by six bearers. Its great weight and bulk, however, render it unfit for service in a hilly country.

"During the passage of the Beshile and Jidba rivers, it was found that twelve bearers could not carry a dhooly at a greater rate of speed than one inch an hour, and along the steep ascents and descents the army has had to travel, dhoolies constantly delayed the baggage animals.

"Dhoolies might be improved if constructed entirely of light iron work instead of heavy teak. They need not be made so high, or of such great breadth as at present, and their legs should not exceed from two to three inches in length. Over a level country, the dhooly is an admirable means of sick carriage.

*Ambulances.*—"The ambulances brought to Africa were constructed to be drawn by bullocks; they are heavy and unfit for draught except on made roads; they were very little used in the campaign, only between Kumayli and Zula.

"Light ambulances drawn by mules, similar to those used by the American and Prussian armies, might have been of some service on the roads between Zula and Adigrat.

*Dandies.*—"The dandy consists of a light wooden frame-work with a cane bottom with two pieces of iron at either end supporting the bamboo pole. It weighs 54 lbs., has nearly all the advantages of a dhooly, and its portability renders it more suitable over bad roads in a hilly country. A temporary cover can be made by fastening a blanket across the pole.

*Swing Cots.*—"A few swing cots purchased from the shipping in Annesley Bay were used by the Force. A swing cot is simply a frame-work of light wood covered with canvas, the whole being supported by a bamboo pole and weighing altogether 45 lbs.

"Swing cots were found to be well adapted for carrying men suffering from slight ailments or injuries, but uncomfortable for patients when placed on the ground (especially in wet weather) as it is occasionally necessary to rest the bearers on the line of march. They have the advantage, however, of being light, and require only four bearers each.

*Hammocks.*—"Several of McGuire's field hammocks were sent with the force; these, lashed on bamboos, were used for the conveyance of sick on the line of march. They weigh with pole only 24 lbs. each.

"They proved very useful for carrying men falling out on the line of march from fatigue or temporary ailments; but they were not found to be adapted for wounded men or for patients suffering from serious illness; they might, however, be easily made a most comfortable means of carrying men suffering from any complaint, and owing to their lightness, portability and other advantages, they would then doubtless be the best description of sick carriage for such a country as that we have just marched through.

"The field hammock had the same disadvantage as the swing cot, in that it could not be placed on the ground in wet weather (this defect might, however, perhaps be remedied by using the staves as supports). If made longer and wider and fitted inside with a light wooden frame, so as to prevent the patient from being doubled up (which he is very liable now to be, unless poles are specially fitted) the field hammock would be a better means of conveyance for sick; and forming as it does a sleeping hammock for men when encamped, and thus keeping them clear of damp ground and conducing to their health and comfort, it would appear highly desirable that some means should be taken to improve the McGuire field hammock to render it a more perfect means of conveyance for sick men."

#### ART. XXVIII.—Deaths from Dengue.

(Communicated by the Sanitary Commissioner, Madras.)

The Inspector-General, Indian Medical Department, has been good enough at my suggestion to obtain the experience of medical officers serving in the Presidency division, of Dengue viewed as a cause of death. In July and August last the district registrars in the town of Madras returned numerous deaths as due to "Dengue" while the public

hospitals and other institutions, although showing numerous admissions, gave no return of fatal cases.

It seemed, therefore, desirable to collect the experience of medical officers serving in the Presidency Division on this point, and the accompanying papers show that although "Dengue" under proper treatment is not often fatal, yet that it has been in some instances undoubtedly a cause of death, either immediate or remote.

The history of the epidemic and its progress over this part of India, will be noticed in my annual report for 1872, and I content myself on this occasion with furnishing for publication, the following facts in regard to the fatality of the disease.

(Signed) W. CORNISH, F.R.C.S.

Sanitary Commissioner, Madras.

*Surgeon-Major, W. J. VANSOMEREN, M. D., Surgeon, 1st District, remarks as follows:*—"I have not had a single fatal case of Dengue in my hospital, nor yet amongst my patients out of hospital. The only instance in which it appeared to me that the disease may have occasioned death, was that of an old man, in the 87th year of his age, who was unconscious when I first visited him, within about 18 hours of his attack, and who was stated to have had pains all over his body, accompanied with fever; he was feverish when I saw him, but he never became conscious and sank in about 24 hours. I think there is reason to doubt if his case was one of Dengue.

I have treated a large number of cases of all ages from infancy to old age, they have all recovered with the (doubtful) exception referred to above."

*Assistant-Surgeon W. MACRAE, M. B., Surgeon, 2nd District, states:*—"In the Military Female Orphan Asylum, there were 100 cases. They were all very similar, more or less, fever for two or three days with head pain and with or without pains in the joints, a period of weakness with want of appetite for a few more days, and then recovery. The treatment in all was very simple; generally a laxative on admission and then a diaphoretic mixture. A measles eruption was seen more or less extensively in half the cases.

At the Vepery Hospital 235 cases were treated. There

was only one death in the case of a boy 9 years old. He was seized at night, brought to Hospital next forenoon, and died a few minutes after admission. His temperature on admission was above 107° Fah. Seven children brought to hospital with convulsions and very high temperature in all cases above 105°, were immediately treated by cold baths. One little girl *et. 10 months*, an E. I. with temperature 106° was kept immersed in water at the ordinary temperature for 1½ hours with great benefit. Three persons aged 4, 6 and 9 years respectively, suffered from tetanic rigidity of the muscles of the body generally, after a few days fever. In a good many women the menstrual flow came on with great violence immediately after being seized with dengue, though it was not due for one or two or even three weeks. I have had no deaths in my private practice, though one infant at 6 months was despaired of for sometime. The cold bath, however, brought down the temperature and relieved the symptoms.

The Vepery Hospital apothecary saw one strong well made native man *et. 30* die on the 3rd day in delirium with very high temperature. He was not under his treatment. He saw several children in convulsions from the disease and treated them all with the cold bath: all recovered."

Surgeon W. FAY, Surgeon, 3rd District, writes:—"That no deaths from "Dengue" have come under his notice in the 3rd District."

Surgeon-Major C. M. DUFF, M. D., Surgeon, 4th District remarks:—"No casualty from "Dengue" has occurred among those persons who received treatment as in- or out-patients of this hospital."

Surgeon JAS. KRESS, M. D., Fort Surgeon, writes:—"No deaths from Dengue occurred in my medical charge. I was called to see two infants both of whom died of this disease. One from convulsion and the other from exhaustion."

Surgeon-Major G. SMITH, M. D., Physician, General Hospital, writes as follows:—"I have the honor to report that from the 30th April 1872, the day on which the first admission from Dengue took place up to the 31st of October inclusive, 926 cases of that disease have been received into hospital, of which, at the latter date, 25 remained under treatment."

2. The total number of deaths recorded in 901 cases treated, amounts to 4 or 0.44 per cent.

3. I append a short abstract of the fatal cases.

(a.) A Gaynor (E. I.), admitted into hospital 6th March 1871, died 12th September 1872. A case of chronic tubercular degeneration of the left lung. At the time when he was attacked with dengue he was in a very feeble and exhausted condition with prospect of an early fatal termination to his case. The fatal result was somewhat hastened by the intercurrent of Dengue.

(b.) Appoo, a native lad *et. 8 years*, was admitted into hospital on the 4th and died on the 5th October 1872. The case was one of Dengue ushered in by severe fever, vertigo, headache and convulsions; when admitted he was insensible, a second fit of convulsion proved fatal. He was 21 hours under treatment.

(c.) J. Smith, (E.) was admitted on the 23rd August with an attack of Dengue which lasted from the 23rd to the 28th of August inclusive; on the 29th and 30th he was free from fever. He had slight fever on the 31st followed by an intermission of five days; on the 6th September he had slight fever with an intermission of five days; on the 11th he had fever followed by an intermission of 6 days; fever supervened on the 20th followed by five days intermission; on the 26th fever recurred followed by two days' deservescence; on the 29th fever set in with much difficulty of breathing which gradually became more distressing until his death on the 6th of October. The post-mortem revealed the cause of death to have been acute tuberculosis. The patient was a man of delicate strumous constitution.

(d.) J. D. King (E. I.), admitted to hospital on the 3rd of October, died on the 8th *idem*. When admitted he was in a comatose condition with all the symptoms of apoplexy. Repeated attacks of convulsions supervened. Sensibility partly returned and his condition appeared to be improving when he was attacked with Dengue on the evening of October 7th, a minute papular measy eruption appeared and his pulse rose from 96 to 112. The eruption was very erythematous, and appeared principally on the face, chest and hands. It was quite characteristic of Dengue. Convulsions followed and he expired the same night. No examination of the body was permitted.

4. There is also at present a case in hospital, the future progress of which causes me some anxiety. In this case Dengue attacked a patient suffering from a mild attack

of enteric fever, and the subsequent progress of the disease has acted seriously upon the strength of the patient.

5. These cases seem to indicate that although Dengue "pur et simple" may be an affection which but slightly imperils life, yet, that it is one which may lead to the development of latent tendencies to disease, and further, that its depressing effects upon the heart and nervous system may prove disastrous when, as an intercurrent attack, it complicates the course of any serious malady from which the patient may be suffering."

Surgeon W. N. CHIPPERFIELD, *Superintendent, Eye-Infirmiry*, states as follows:—"I have attended, since February last, 212 Europeans and 362 natives with dengue, namely 117 Europeans and 309 natives, in-patients of the General Hospital; one European and 13 natives, in-patients of the Eye-Infirmiry; and 94 Europeans and 40 natives in private practice, and hitherto I have not met with a fatal case. Several European and East Indian children of ages varying from 3 months to 6 years, suffered severely from the disease with remarkable prostration of the nervous system. Some of these were attacked with convulsions, but I am happy to say no casualty occurred. The younger patients up to 16 years of age, as a rule, suffered but very little from the pains, stiffness and lameness which are so common sequelæ of the disease in adults; but in this class of patients troublesome diarrhœa is a very common complication. My experience is that, in the greater number of instances, natives suffer much less than Europeans.

Senior Apothecary Turnbull informed me that in his practice a Eurasian lad of 8 or 9 years died of dengue; he was suddenly seized with convulsions, followed by frothing at the mouth with the ejection of a mass of partly coagulated blood. Chinniah Naidoo, contractor for civil Hospitals, also informed me that three children died of the disease in his house, the fatal event in each case being preceded by loud screams and sudden vomiting of blood."

Surgeon R. W. COCKERILL, *Superintendent, Lying-in-Hospital*, writes:—"I have had no deaths from Dengue among adults, but two children aged 5 and 13 months respectively while suffering from dengue were attacked by convulsions and died in this hospital. Both were very ill on arrival and died shortly afterwards. In my private practice every case has recovered."

Surgeon W. FAY, *in Medical Charge H. M.'s Penitentiary*, states:—"There have been no deaths from Dengue in the Penitentiary Hospital."

Surgeon J. M. JOSEPH, M.D., *Surgeon, Body Guard*, writes:—"I have the honor to report that no case of Dengue has terminated fatally in the hospital of the Body Guard or in my practice, although a very large number of cases have come under my observation and treatment, both in and out of hospital."

Assistant Surgeon S. B. HUNT, *7th Regt. Native Infantry*, remarks as follows:—"The only deaths which I can in any way attribute to Dengue are the following:—

The first case was a recruit boy, aged eight years, who was brought to the hospital suffering from high fever and insensible. He was admitted in the evening and died the next morning. He never recovered consciousness, and he had a severe convulsion (the only one) about 15 minutes before his death. This case occurred last July. The second case occurred in my private practice in the person of a female aged nine months, the child of Indo-Briton parents. The child was attacked with fever followed by convulsions which increased in frequency and terminated fatally in about forty-eight hours from the commencement of the illness. I have seen no deaths from this disease in adults."

Assistant Surgeon R. V. POWES, M.D., *13th Regiment, M. N. I.*, writes:—"Within my experience I have not known of a single death from Dengue."

Surgeon J. M. JOSEPH, M.D., *17th Regiment, N. I.*, writes:—"No case of Dengue has terminated fatally in the Hospital, 17th Regiment, N. I., or in my practice, although a very large number of cases have come under my observation and treatment both in and out of Hospital."

Surgeon T. G. HOWELL, *37th Regt., Grenadiers*, writes:—"No deaths from Dengue have taken place in the 37th Regt., Grenadiers."

Surgeon A. H. BEAMAN, *in Medical Charge, E. A. V. Company, Palaveram*, states:—"During the last 3 or 4 months about 422 cases of Dengue have come under the observation of myself and Assistant Apothecary Hawkes of the E. A. V. Company at this station; men, women and children of all ages were attacked by it. No deaths occurred, nor do I believe that "Dengue" *per se* is ever a fatal

disease. It is just possible that the convulsions, with which the disease is almost always ushered in when children are attacked, might on rare occasions prove fatal, but I do not consider it possible."

Surgeon D. KEARNEY, in charge of the Details at Saint Thomas' Mount, submits the following return of the cases of Dengue that came under his treatment; no deaths occurred among them.

|          | Admitted. | Discharged. |
|----------|-----------|-------------|
| Men      | ... 90    | 90          |
| Women    | ... 133   | 133         |
| Children | ... 205   | 205         |
|          | 428       | 428         |

Assistant Surgeon W. S. Fox, Vellore, writes:—"Only one case of death from Dengue came under my own observation, a European child aged 3 years, and this was more the result of want of proper care and attention, both parents being perfectly helpless themselves from the disease. The child while suffering from a severe attack was left to the sole care of a cooly, and I fear very much neglected. With both parents the type was very severe; one especially took a typhoid form with buboes in the axilla. When in charge of the 28th Regiment lately, I had reason to believe that some few cases of deaths in the families reported to me as fever were from Dengue, but as they did not come under my own observation or that of my subordinate, I cannot speak with certainty; in any case there could only have been a few, and probably want of proper care and nourishment would account for most if not all."

Surgeon J. WILKINS, M. D., in charge of the Detail Hospital, Vellore, submits the following number of cases of Dengue that came under his treatment:—

|             | Admitted. | Discharged. |
|-------------|-----------|-------------|
| In-patients | ... 497   | 497         |
| Out do.     | ... 428   | 428         |

"Remarks—Many cases of Dengue that occurred in the Lines have not come under treatment. No record of any case having proved fatal."

ART. XXIX.—Case of reported death from Dengue.

By First Class Hospital Assistant, C. SITHUMBRUM PILLAY, No. 456, Raj Hospital, Tanjore.

On the 16th November 1872, a Brahmin named Rajandrum Pundit, happened to mention to me that his brother Sivasawmy Pundit, had died of Dengue that day in Tanjore Fort. Being aware that the Sanitary Commissioner and others had reported dengue to be a non-fatal disease so far as adults were concerned, I thought it desirable to have the history of the case carefully investigated, and accordingly I brought Rajandrum Pundit to Hospital, and obtained from him the following history of his brother's illness, in the Zillah Surgeon's presence:—

Sivasawmy Pundit, Brahmin, aged 55, employed in the palace of Tanjore as a priest, known to me personally as stout, middle-sized and apparently healthy, was attacked with a fever, believed to be dengue, at midnight on 13th November, which increased during the 14th and passed off with profuse sweating about day-break on the 15th. There was, however, some abatement of the fever and some sweating on the evening of the 14th.

While the fever was present he did not sleep, he was not delirious, nor did he vomit nor suffer from diarrhoea. He did not complain of pain in his head, or in his back, or in the nape of his neck; the pain was limited, Rajandrum Pundit stated, to the joints.

On being asked to specify the joints affected, he said that the knees only were painful. The deceased was not able to sit up; he did not complain of thirst.

Early on the 15th he was seized with purging and vomiting. When these symptoms first set in does not appear from his brother's statement, but the wife of the deceased, whom I saw on the 19th informed me that the vomiting preceded the purging.

Both the wife and the brother agree in stating that the vomiting was distinctly of a bilious character, and that it ceased at midnight; the brother's statement, however, was that he vomited 6 or 8 times, while the wife informed me that he vomited 12 times. Both are also agreed that the purging commenced at day-break and ceased at midnight on the 15th, and that the evacuations were about 9 in number;

the last evacuation, passed one hour before his death, both the wife and brother say was dark colored, and that most of the other evacuations were yellow and watery. The wife, however, states that he passed one white evacuation only when the diarrhoea set in, while the brother's statement was that the first two evacuations were white. At first the brother appeared to hold that these light-colored evacuations were like rice water, subsequently he corrected himself and said that they were like slime, and this last was also his sister-in-law's description. Both were agreed that the deceased had no cramps, and that his skin became cold after midnight on the 15th; also that he had a distinct voice, and that he went on talking up to 5 A. M., on the 16th, that is to within about an hour of his death; that he had difficulty of breathing during the night, and that he became insensible an hour before he died. His urine was not suppressed.

The deceased is reported to have enjoyed good health generally, but to have been liable for several years to rheumatic pains which troubled him 3 or 4 times a year, as well as to occasional attacks of asthma, but he had not previously suffered from bowel affection.

On the 13th November he was at the palace as usual on duty and took his morning meal; he did not take his food in the evening because the 13th was the anniversary of his father's death. Until the fever left him, on the morning of the 15th, he was not given any food, according to the well known native practice of withholding food in fever. During the 15th he was given rice and sago congee without milk, 6 or 7 times, but after 10 P. M. no food was given.

In the street in which the deceased lived I counted 35 inhabited houses, and ascertained that there were cases of dengue in almost every house. In the house occupied by the deceased and his family a case of dengue occurred at the end of September, but there had been none other previous to 13th November.

The deceased declined to have any medical attendance, feeling sure that the disease was dengue, and this opinion was shared in by his family and neighbours who, no doubt, had seen many cases of the disease, if they had not actually experienced it in their own persons. Asthmatic symptoms were, however, troublesome on the 14th, and

it is just possible that the pain in the large joints may have been due to rheumatism. The looseness of the bowels, which seems to have caused Sivasawmy Pundit's death, is sometimes considerable in dengue. In a case of an European child attended by the Zillah Surgeon, where the swelling of the joints and the eruption were marked symptoms, dysentery was sufficiently severe to place the child's life in some danger; and I know of another case of undoubted dengue in an adult where profuse diarrhoea existed for 24 hours, but did not much reduce the patient.

The fatal collapse in Sivasawmy Pundit's case might probably have been obviated by sufficient food and judicious treatment.

### OURSELVES.

IN our last issue for November we stated that it was our intention with the present number, of this Journal to bring this publication to a close, for the reasons specified in our Editorial columns. During the past month we have received a few suggestions from some of our contributors and friends which we think, if acted upon, may be the means of extending the circulation of the Journal and be the means of enlisting the interests and help of those who have not hitherto assisted us either by becoming subscribers, or by contributing to its pages. We have, therefore, determined upon conducting the publication of this, the only periodical representing Science in this Presidency, for a further period of six months, as an experiment. We take this opportunity, therefore, of appealing to the members of both Services as well as the members of Apothecary and Hospital Assistant grades to aid us, in the manner alluded to above, in averting the untimely and unnatural death of one of the oldest Medical Journals in India.

### MEDICAL EDUCATION OF WOMEN.—II.

IN an article which appeared in our impression of October last, we ventured to draw attention to a subject, which is not a little occupying the minds of thinking individuals at home, viz., the advantage of so extending the curriculum of female education as to provide, in keeping with the spirit of the age, for

an honourable and really useful career for that interesting branch of the human family, who, it is to be feared, have been hitherto regarded as fit only for domestic drudges, or as well-dressed living pictures to ornament a Ball-room. We are no visionary believers in, or rampant advocates of, "Women's rights;" but we belong to a practical school, whose creed it is to hold that a woman has a higher destiny to fulfil than merely to bring a child into the world, to mend her husband's socks, or to read sensational novels as her sole occupation in life. We are more particularly interested at present in woman's fitness for acquiring medical knowledge, and her special adaptation for making use of that knowledge, either as a means of livelihood for herself, or of disinterested benevolence to those around her, in whatever position she may be placed. Men, very generally, find their sphere of usefulness, or their lot in life, already settled for them by circumstances over which they individually have but little control. With women the case is different; for beyond the primary duties that fall to each, as daughter, wife, or mother, it much depends on a woman's own inclinations and feelings what work she will undertake, or indeed whether she will undertake any work at all. Except among the actual working classes, where dire necessity enforces labour that provides the sustenance of life, women generally do not work in the sense in which we understand work. In the middle classes most women content themselves with the simple duties of the nursery, or with the task of seeing that the daily table is set out in order, and is amply provided with creature comforts for the good-man's delectation. In the higher classes female life is often still more aimless and profitless; personal comfort, dress, finery, and social amusements being the only objects of thought and ambition. What care such

women for even the natural position designed by the Creator of "help-meet" to man? They live an indolent life of voluptuous ease, or gilded refinement. They actually delegate the most sacred duty of womanhood, the care of their children, to paid governesses and nurses, who, good and faithful as they may be, cannot devote to the infant heart and budding mind the constant and varied ministrations of gentle, thoughtful love with which God in His wisdom has gifted the true mother, alone. It is good, however, for the men of the present generation, and the little ones that will be the fathers of a future generation, that a change is beginning to come over the spirit of the female dream. All women are not alike in their self-seeking, or in their love of indolent ease. To the honour of womanhood be it said that there are many noble exceptions who have no love for this state of moral degradation; and it is now not wonderful to find many women in all classes of life who are sincerely anxious to do all the good they can for their fellow-creatures, and thus glorify the Great Master of the human race. It is among the ranks of such women—and it is to be devoutly hoped that their ranks will ever extend—that we shall find eager candidates for medical knowledge and skill, in view to the after-exercise of such knowledge and skill for the good of mankind.

It must not, however, be forgotten that medical work is too fatiguing, too anxious, to find favour with those who value knowledge for the personal gain it may bring, rather than for the blessings it is calculated to confer on others by its exercise. There must thus of necessity be two or three different standards of medical education for women. The highest standard would not attract many students, in India at least; for by the highest standard, we mean a full course of study, such

as is given in the Medical College to those who intend to make the practice of medicine their profession. At Home there are many women prepared to give up the time, and undergo all the labour and fatigue, necessary to attain this standard. Here, however, we do not think that many women could, or would, avail themselves of the opportunity, even were it conveniently afforded them. But granting that ladies in India have not time and opportunities to go through a complete course of study, we are sure nevertheless that there are many who would thankfully attend classes and lectures on such subjects as Physiology, Hygiene, Midwifery, Diseases of Children, and Minor Surgery, if their attention were invited to the subject, and befitting arrangements made for their presence. In large towns like Madras there is, of course, an ample supply of medical men, and medical men too of high acknowledged skill; so that in such favoured places we never need fear being left to watch in breathless anxiety for the doctor, who, perhaps having a long way to travel, may arrive all too late. But even in Madras it would be of the greatest value, for mothers of families especially, to have some medical knowledge. Sudden accidents often unhappily occur among the inmates of the house or the servants in the compound, and in such cases much may depend on prompt and appropriate action. This applies with all the greater force in the Mofussil, in outlying stations where there is not even a Government Dresser within reasonable distance. Army surgeons are not to be found in every small town of India; and qualified independent practitioners are as rare as the black swan. The Medical men of the service are principally located where there are troops, or are placed in charge of large civil stations and jails. But European ladies in the position of wives of Judges,

Collectors, Officers, Engineers, and Missionaries, are scattered broadcast over India. These have it in their power to do an immense amount of good; and we cannot but believe that many of these ladies would be most thankful for such an interesting and ennobling employment as bringing the solace of medical aid to the enfeebled or anguished frame. They might also be able to help each other in their families at times; and while there are so many servants and retainers attached to every large household, there will always be scope for a lady's kind and intelligent ministrations. Many ladies do even now endeavour to attend to their servants and children in minor ailments; but of course with the best intentions, one cannot do much good while ignorant of the import of symptoms, and equally unacquainted with the powers of drugs, and the proper administration of even simple remedies.

It is now time, however, to turn our attention to a practical view of the question we have set ourselves. We have endeavoured to assign reasonable grounds for our views on the important subject of female medical education. At all events we feel sure that no one will hesitate to admit that trained and skilled assistance is preferable to the ignorant endeavours of those, who, never having been taught even the rudiments of the art, offer themselves to the public and the profession as nurses and midwives. In this country at least, a great step has been taken in the right direction by the admission of such women as desire it to tuition in the General and Lying-in-Hospitals. We find repeated in every Gazette an official invitation for pupils at one or both of these Institutions, on what must be considered, for the object in view, very liberal terms. Instead of the women having to pay a premium in consideration of the benefit conferred on them, they are offered Rs. 15 a month for Europeans and East

Indians, and Rs. 10 for Natives, volunteering as pupils in the General Hospital, and Rs. 7 a month when they elect to study in the Lying-in-Hospital alone. We cannot but look on this action on the part of Government as most benevolent and beneficial, for, we believe, they are thus conferring a great blessing on the country at large. We have now in Madras a number of well trained and competent women, who earn a very fair income by nursing the sick and attending midwifery cases. These women have already begun to spread themselves, and take up their residence in Mofussil towns. No doubt the supply at present is not equal to the demand; but that by a sort of natural provision is sure to improve as time goes on. Thus we have little doubt that, in a comparatively short time, all the principal Mofussil towns will be as well supplied as Madras now is; and the "up-country" doctor will seldom experience any difficulty in procuring a trustworthy nurse to carry out his wishes and instructions so far as the European and East Indian population is concerned. This is well; but there is a great deal more wanted. What is most urgently required is a diffusion of medical knowledge among the natives of the country. How many men, women, and children die annually from purely preventible causes we do not know; and we suspect it is a question that would puzzle even the Registrar of deaths. It is perfectly impossible that in every tiny hamlet, on the distant slopes of hills, and in districts like Wynaad, Coorg and Ganjam, Government can keep up numberless well ordered hospitals with a duly qualified apothecary and several well instructed dressers, all under the daily supervision of a diplomaed surgeon. Even were it possible thus to bring medical aid to the very doors of the people, we should not have gained our object. The people of the country, very unreasonably no doubt, have a perfect horror of "going to

Hospital." It is difficult to fathom all their crude ideas on the subject; but we find the Brahmin declining to go for the sake of his caste, the Mussulman woman hindered by her gosha scruples, and one and all asserting that these European doctors are really human devils ever ready to burn, cut, probe, or amputate. Time may perhaps enable us to scatter hospitals broad-cast over the land; time may perhaps obliterate, or at least weaken, the vulgar prejudices of the people; but we most emphatically assert it will indeed be a work of time. Meanwhile how can we best help these thousands—aye millions—of people, our fellow subjects and fellow creatures? There is no doubt that where the doctor, the apothecary and the dresser fail to gain admission, a woman, would be gladly welcomed. It is so here in Madras. High caste Brahmin ladies accept most gratefully the aid of our midwives. We do not however think that our European and East Indian nurses are exactly the agents to use in the duty of carrying benevolent aid to the widely scattered many of the country, and that for more than one reason. It is true that a rich native will occasionally pay handsomely for services which have procured the safe and happy advent of the son who is not only heir to his wealth, but whose birth is inexorably necessary to save the father's soul from the torments of "*Put.*" These are however exceptional cases. Up-country especially there are many needing aid who cannot afford to pay much for it; and there are many districts in which a European or East Indian nurse or midwife could not make enough out of her hard work, on which to live in anything like comfort and decency. But where a horse will starve, a sheep or goat may live in luxury: a native woman, with her few and simple wants, will earn enough to keep herself and family in comfort where the European or East Indian, needing animal food, good clothes, and good

shelter, must gradually perish. Another reason for endeavouring to obtain a large supply of trained native women as midwives and as nurses of the sick, is that they would be more welcome among a large proportion of their fellow country people. They should be of all castes, Mussulmanis, Brahmins, Chatryas, Sudras, and Pariahs. Then we should have a chance of giving efficient aid to all. This is the object we have in view—how to attain it is a somewhat difficult task. Some natives do already come to our schools of nursing and midwifery; but their numbers are altogether inadequate to accomplish the great object we seek to effect. Perhaps one consideration that prevents native women from coming forward as pupils is the fear that when they have learnt their profession, it will be nearly useless to them. European ladies prefer the ministrations of their own countrywomen when practicable, and the chances to native women of getting a good practice among their own people are not sufficiently encouraging, to induce them to undertake so much labor and study. Would it not be possible for Government to take those that pass the required examinations with credit into their service, and to attach them, as a temporary measure at least, to the various District, Jail, and Municipal Hospitals on a small monthly salary? They might be made worth their keep by being appointed to wait on, and attend to, the inmates of the female and lying-in wards. They would thus be supported for a time out of the public money, until they established a connexion in the surrounding country, and were thus able to earn enough to support themselves. We have endeavoured to set forth, very feebly and imperfectly we fear, a scheme which may be promoted and made to bear fruit in India for the education of women desirous of medical knowledge and anxious to turn that knowledge to account. If it be practicable to have classes for the instruction of those

ladies who are desirous to learn, and to hold out some slight pecuniary inducement to the native women of the country to study our systems of Midwifery and Nursing, we shall not have written in vain. The gain to the community at large will be great; and the labours and anxieties of the professional man will be certainly lessened, when he knows that the mother, wife, or nurse is capable of understanding and intelligently carrying out his instructions. The foundation of a reasonable system of medicine will be laid among the natives; a good field of industry will be opened to poor women, whether East Indian or European; and the women of the higher classes who study the higher branches of medicine, will reap the reward of their toil in the good they will be able to accomplish, and in the deeper appreciation they will acquire of God's power and wisdom in Creation. We have heard it said, "the undevout astronomer is mad"—mad too must he be who can study all the wonders disclosed in the study of medicine, and not feel an ever-deepening devotion to, and reverence for Him, in wondering awe of whom the Psalmist of old exclaimed—"O Lord how manifold are Thy works; in wisdom hast Thou made them all!"

### THE NEW MEDICAL FUND.

WE learn with satisfaction and we have much pleasure in bringing to the notice of the junior members of our Service the news received during the past month regarding the establishment of a New Fund, sanctioned by the Secretary of State for India, for the Staff Corps and for the Ecclesiastical and Medical Departments. The percentage to be paid to widows, it is said, will be determined by the Govern-

ment annually, so that a fluctuation in the amount of payments must be anticipated. With this exception, the New Fund, it is reported, will be of advantage to those members of our Local Service who have been involuntarily debarred from a participation in the privileges of the Old Fund. We are glad to observe, however, that the Government is alive to the desirableness, nay, to the necessity of the Fund to the members of a Service who find it no easy matter to reserve something of their small earnings for a rainy day. We conclude by trusting that there will be no delay in opening up the Fund.

## REVIEW.

OWING to the delay occasioned by the substitution of simpler forms when the "elaborate tables hitherto annexed to the report were nearly completed," the Annual Report of Civil Dispensaries for 1870, comes before us for review, nearly two years after date.

The Inspector General I. M. D. opens his report by referring to the cyclone which occurred at Vizagapatnam on the night of the 4th November 1870, and quotes the following passage from the report of the Civil Surgeon who states that there was a lull in the storm, of 10 minutes' duration between 2 and 3 A.M. of the 5th November, during which interval the following appearance was observed:—"Luminous appearances, like balls of fire, were seen passing through the air from the N. E. to S. W. direction and *vice versa*, and near the Regimental lines some of the people there, unhoused drummers and their families, saw one of these balls fall and burst upon the road without explosion or sound, throwing out thousands of sulphurous-like sparks, and fortunately without touching any of the inflammable roofs of houses."

During the year 1870, twelve hospitals and dispensaries were in operation in the Presidency town and sixty-four in the Mofussil. The Inspector General comments on the insufficiency of these institutions for the wants of 25 millions of people, and hopes that, under the operation of the Towns' Improvement and Local Fund Acts, the benefits of European Medical Science may be extended to every town, of any importance, in the Presidency. We cordially sympathize with this aspiration, and earnestly hope that the day is not far distant when it may be realized. The beneficent administration of the Government could not be better illustrated than by the establishment all over the country of dispensaries in which the suffering poor may obtain relief, sympathy and care, at the hands of those who have been trained at our local medical schools. We know that the Inspector General has done much to induce the various municipalities to employ well-educated medical men, in whose capacity, training and experience, confidence could be placed in cases of emergency; but we very much regret to

hear that various municipalities have deliberately preferred men who, in our opinion, are totally unfit for medical charges of any kind. Our readers are doubtless aware that the Medical College consists of three departments.

A.—Senior, in which students qualify, by five years' study for the degree of M. B. They pass the F. A. test, prior to entering on their Medical studies.

B.—2nd Department, in which young men qualify for the grade of Assistant Apothecary, by three years' study, after passing an entrance examination, whose requirements are not as high as the matriculation standard.

C.—Junior Department, in which lads qualify for the grade of Hospital Assistants, by two years' study. These pass an entrance examination of a very elementary character.

Class A. has, unfortunately, no outlets. This Department is so poorly represented, that it has little more than a nominal existence. We trust we may be pardoned for expressing a hope that Government may soon see the un wisdom of spending much money in turning out a few highly-finished agents and then setting them aside, with nothing to do. This is part of the educational system of the country.

Class B. makes, on the whole, good medical subordinates. The more intelligent and trustworthy among them are occasionally entrusted with minor medical charges.

Class C. is intended to be Hospital Assistants and nothing more. Their training fits them for little else than routine hospital work, under the eye of a superior.

It is truly a matter of regret that municipalities should, on the score of economy, insist on employing men of Class C, seeing that they are, both by preliminary education and professional training, unfit for the responsibilities of a medical charge. It is clear that municipalities, in selecting medical men for their dispensaries, are influenced solely by considerations of economy, and it is, therefore, not to be wondered at, that they have turned a deaf ear to the judicious advice of those who are desirous of providing them with a better class of practitioners. A man of the Hospital Assistant class would cost about 30 Rs. a month, whereas one who has received a training equal to that of an Apothecary, would cost three times as much. The question of selecting suitable men for the medical charge of Dispensaries to be

opened out under the Local Funds Act is an important one, and deserving of the immediate consideration of Government. This point should be settled, before these institutions pass into the hands of men who are unfitted, by professional training, for such an important trust. As pecuniary considerations stand in the way of a right settlement of the question, perhaps Government might be induced to give a helping hand. By the system of grants-in-aid, Government has shared the cost of education. A similar system, applied to Hospitals and Dispensaries, would probably induce municipalities to engage the services of better qualified men, of men who are competent to act in cases of emergency and to give sound advice in all matters relating to sanitation. Properly trained medical men can be made use of, in so many ways, for the good of the country, that it would be a pity to lose such an opportunity of doing good on a large scale, by the selection of a very inferior order of practitioners, deficient in general as well as professional knowledge and of inferior social position. Surely Medicine and Hygiene have as much claim to the support of Government, as the education which is scattered broadcast over the land, an act of kindness to the masses which has not only not won the hearts of the people, but has helped to excite considerable discontent in the minds of those who have attained to academic honours, with little or no cost to themselves. The help we now solicit for Medicine and Hygiene will, on the contrary, do a vast amount of good and secure the gratitude of the masses. The Madras Medical College is capable of supplying the country with a class of reliable medical men; but its teaching power, we regret to say, is mainly expended in training men for inferior and subordinate positions in the civil and military branches of the service.

After the Inspector General's covering letter, follow extracts from the reports of the various officers who were in charge of Dispensaries during the year. Although these reports show the increasing usefulness of Dispensaries and their growing appreciation by the people, we can collect from them many evidences of the oft-repeated statements that our native fellow subjects are only too ready to avail themselves of the benefits of the European system of medicine; but that they are unwilling to pay for the same, and that natives will subscribe towards a Dispensary, only when the resident European officials set an example.

The Hospital Assistant at Anantapoor says, "I regret to say that, owing to the departure of all the European residents from the station who patronized this charitable institution, the amount of subscriptions has fallen off a great deal, and the civilized native inhabitants of this town have withdrawn their subscriptions, simply because there being no proper stimulus for them to co-operate with their European brethren. I consider that the working of the Dispensary was satisfactory in all other respects, except this important defect."

Surgeon Major Walter says of the Berhampore Dispensary: "Through an appeal made by the Tahsildar, the Zemindar of Kullicot has been induced to pay up his promised subscription, amounting to 200 Rupees, the Zemindar of Chinna Kimeddy Rupees 105, and the Zemindar of Jarada Rupees 50; but I am sorry to say the natives generally are lamentably indifferent concerning the welfare of the Institution; only a very few subscribe, and they generally for sums under one rupee; even with the above liberal subscription from the three zemindars, the native share is only thirty-eight per cent. of the whole amount subscribed, against sixty-two from the European gentry who subscribe most liberally."

Surgeon-Major Clementson says of Chingleput:—"This Institution is but poorly supported, so that but few in-patients can be admitted, except those who can feed themselves. The average monthly subscription for the past year has been Rupees 13-6-0. The Collector was good enough to contribute the sum of Rupees 156-4-0, being half of a sum placed at his disposal by the Famine Relief Committee."

With regard to the Dispensary at Gooty, we read: "The subscriptions from the native residents amounted to Rs. 106-14-0, contributed chiefly by several of the Government officials of the different Cutcheries in the place and by a few vakeels. The subscription list does not contain the name of a single merchant or trader in the place, of whom, however, there are but few. Yet it is an undeniable fact, though not directly connected with this subject, yet bearing upon the point, that money, amounting individually to hundreds and even to a thousand and upwards, was squandered only a few months back, during the celebration of the Dussarah festival, by some of the wealthy men of the place, for the mere gratification of listening to the rapturous strains of a native *prima donna* brought up expressly

from Madras to Ghooty for the occasion, while the figures in the subscription list individually simply represent units. Moreover, while the sick poor resort to the Dispensary for relief from villages at a distance from Ghooty, it is found that nothing is contributed towards the support of the institution by the wealthier inhabitants of these villages."

Assistant Surgeon Tyrrell says of the Guntoor Dispensary: "The native subscriptions are very small, and have much diminished during the last two years. This is, no doubt, owing to the increased taxations."

Want of space prevents us from making quotations which shew the indifference of the people to sanitary improvement, and for the same reason, we regret our inability to adduce evidence of the fact that many of our locally trained men are doing good work, both as medical practitioners and sanitarians. If our readers will excuse the peculiar English of the Hospital Assistant at Chellumbram, we shall quote what he says of the sanitation of the town, in proof of what we have said:—

"The usual sanitary arrangements, as I have always complained, are only made as a temporary measure during the festivals; that over, the town relaxes into its accustomed nuisance and becomes very well adapted to promote epidemics of all kinds. That neither the authorities nor the influential rich towns-people have taken it in their heads to apply for the introduction of a regular Municipality, is a fact that is to be much regretted. On the other hand, they have, as I am led to believe, used their influence in keeping the probability of its introduction as far off as they possibly can. This town is large enough to require district sanitation. There are upwards of 100 streets with no less than 15,000 inhabitants. If this town is not worth having a Municipality, I do not know if Mayaveram, a hamlet in comparison to this, is. They have a ridiculous contrivance for removing filth from some public streets. The inhabitants are compelled to remove their dung hills from the streets to their backyards; there to rot in worms, or to burn them at their very doors, thus to make the vapour to diffuse itself in the atmosphere and be the fruitful source of many infections. This course the Magistrates cannot help but enforce, there being no resource from which the expenses of their conveyance out of town can be defrayed."

324

## MEDICAL MISCELLANY.

(Continued from page 400.)

The mode chiefly in use for the administration of Ether has been that mentioned in the latest and in the majority of the works on Surgery from America\*; by using "a thin and hollow sponge, which is large enough to cover the mouth and nose, and which is first wrung out of warm water, and saturated with Ether poured on in quantities of not less than half a fluid ounce; this is laid on, and a cone of pasteboard or light wood superimposed. The first few inhalations should be made when the sponge is a little distance from the face; but as soon as the anæsthetic influence has begun, the sponge may be more closely applied, and need not be removed except when necessary to apply more ether. Of course if, as will sometimes happen, the patient be seized with a fit of coughing, or, from having eaten a meal immediately before the operation, he should begin to reject from the stomach, the sponge must be withdrawn until tranquillity is restored. *If the patient breathe freely he cannot be too rapidly Etherized, and there is no danger as in the case of Chloroform from the vapour being too concentrated.* Enough air is drawn through the interstices of the sponge and the perforation of the cone to cause any risk from this cause, and rapid Etherization is much less likely to cause pulmonary congestion than slow inhalation of the vapour, prolonged through considerable time."

Such are the general directions given by a surgeon who avows that he prefers Ether.

I select, in contrast, the directions given by a surgeon (Dr. Gross), who prefers Chloroform. He observes as follows:—

### ETHER.

During the process of Etherization the patient may sit up with impunity or be recumbent as may suit the convenience of the operator, no injury resulting from even a protracted maintenance of the erect position.

### CHLOROFORM.

During the process of Chloroformization the patient must lie down, and not only so, but the head and shoulders should be depressed, owing to the greater difficulty of maintaining the circulation of the brain through the influence of the heart's action.

\* Asshurst.

## ETHER.

The admission of air is comparatively of little consequence.

The inhalation should be commenced with not less than half an ounce, and diligently maintained till full anæsthetic influence is produced, which usually requires a considerably longer period.

No special attention need be paid, as the fluid possesses none of the poisonous (!) properties of Chloroform.

## EFFECT.

At first a short cough is usually provoked. This soon subsides and the system gradually lapses into a *calm, quiet* condition, attended with muscular relaxation, closure of the eyelids, and mental unconsciousness followed in many cases by stertorous breathing.

## CHLOROFORM.

The importance of having an abundance of air during the inhalation of an article so potent as Chloroform is self-evident: it is absolutely essential to the safety of the patient.

The inhalation should be gradually, and not hurriedly, effected, time being allowed to allow the accommodation of the system to its influence, avoiding the shock which might otherwise result to the heart and brain. From six to eight minutes should be spent in producing its full effect.

The assistant having the charge of the process must give it his earnest and undivided care; and as soon as the inhalation has been fairly entered upon, one of the attendants should sedulously watch the state of the pulse, the respiration, and the countenance.

## EFFECT.

This may be divided into two stages:—1st. That of excitement, when the patient struggles and cries. The eye has a wild, staring expression, the face is flushed, and pulse preternaturally quick. This varies much in degree and duration. The second stage then ensues, and the individual gradually lapses into unconsciousness. Feeling and intellect are suspended, and if this state be carried farther, coma will ensue, and the appearance be apælectic. As yet all is safe; but a few more whiffs, and an important link in the chain of life may give way, and the patient be sent into eternity.

The writer lays considerable stress on the importance of using caution, and good Chloroform, and ascribes the *good luck* he has so far had in his practice (though he gives one instance of a narrow escape, where artificial re-spiration was necessary) to the careful observance of these conditions.

On contrasting the comparative merits of the two anæsthetics as described by him, "*good luck*" is not indeed an exaggerated term when applied to the use of an agent so fraught with danger, and when we find such a suggestive expression used by a writer of eminence, it cannot be questioned that Chloroform, with its signal dangers, has claims far inferior to Ether as a pain-destroyer, and that such a resolution as was adopted by the Massachusetts Hospital—"that the exclusive use of Ether should be an absolute law of the Institution"—was most advantageous for the patients.

## MODE OF ADMINISTRATION.

Having referred to the diversity of opinion as to admission and non-admission of air during the process of Etherization, I may state that I adhere to the general correctness of the latter view, and cannot adduce better evidence than the following practical illustration:—

I etherized a medical man, aged about 24, as intelligent and fine a specimen of a vigorous young man in full health as well could be, and who was in agony from toothache. I requested him to notify his sensations as far as possible, and to conduct the administration to himself, as long as he had sense to do so, and to intimate his wants. After the few first inhalations he found it best to desist a little till the throat became somewhat accustomed; he then felt a benumbing soporific influence and called out "*more, more, delicious, delightful feel;*" he sank into insensibility, the dentist drew the tooth, and he gradually returned to consciousness in a few minutes.

In this muscular young man there was not the slightest spasm, or any unpleasant symptom; there was not the slightest irritability of stomach, and within one hour afterwards he enjoyed a capital dinner. His description from personal observation includes the general rules to be observed—of avoiding irritation at the very commencement, and of then passing on the influence, to the exclusion of air in a great measure; when this is done there is little apprehension of spasm, or sickness, or of delay.

\* Neligan's "Medecines." By MacNamara.

NOTE.—August 9.—I operated on four patients to-day—one was etherized, had two tumours of the leg excised, and was in bed again within ten minutes; another was etherized and had a tumour removed in eight minutes; two others underwent the process in about from six to eight minutes—nothing could possibly have been more satisfactory.

In conducting Etherization the following points should be attended to:—

The patient should not have eaten any meal within three to four hours. A glass of wine, or a cup of tea may perhaps be allowed within two hours of the Etherization, unless in cases where stimulants are urgently necessary. If this simple rule be attended to, the instances will be indeed very exceptional, in which sickness of stomach will occur. In eye operations, it is needless to remark, exact precautions should be taken.

The patient must be freed from any tight clothing, and from stays or strings which might in any way impede full respiration. The recumbent position is best suited, with the head fairly raised on a pillow; lying on the *side* I find better than on the back, but it is matter of no very great importance; patients can also be etherized equally well when sitting, but the relaxation of the muscles supporting the head and body leads to inconveniences, and the recumbent position is certainly preferable in all cases.

The inhaler is then charged with from  $1\frac{1}{2}$  to 2 ozs. of pure anhydrous sulphuric ether,\* which should be poured in slowly. The mouth-piece is then applied gently over the mouth and nose. The patient may hold it and keep it applied for the first few minutes; this lessens any nervousness about its use, and the mouth piece can be taken away at pleasure so as to moderate the inhalation and accustom the throat to the vapour. The patient should be directed to cough or blow out, and as each such action is followed by a full inspiration; such effort aids the breathing in of the vapour very materially, and I am convinced the more freely and fully the Etherization is pressed till insensibility is attained, the better for the patient. After two or three minutes any irritation will be passed, and the breathing will be carried on regularly. The mouth-piece may be then taken charge of by the administrator, and the patient's hands laid down, the breathing will gradually become full, and the stage of insensibility steadily and equably ensue. This may be pushed, even till stertorous breathing ensues, which need cause no alarm, but as perfect insensibility is attained without it, it is not necessary further to overwhelm the patient.

The administrator will now suit himself to the circumstances of the case: the patient's condition is altogether in his hands, should there be signs of the ethereal influence passing off, he can pour in a little more, and should the contrary appearances arise, he can, by opening the funnel, allow air to be more or less freely admitted into the inhaler, or he can withdraw the mouthpiece temporarily.

The mouthpiece being usually made of elastic tubing should

\* That prepared from methylated spirit, of 720 sp. gr., answers well.

be pressed firmly on the face, or be slightly moulded to the nose if required; it is well after the few first inhalations, to apply it equally and closely, thus Etherization will be attained more rapidly and satisfactorily.

It is best to preserve silence, and not encourage the patient to speak.

If attention be directed to the flexible diaphragm of the inhaler, its motion serves as an index, and an estimate can be always formed as to the condition of the respiration; and how far the patient from timidity or otherwise, is not fully respiring, or the administrator is imperfectly applying the mouthpiece and allowing the escape of the vapour.

Should it so happen that the stomach be sick, and any food have been recently taken, the head should be turned on the side, and the chin slightly depressed, to favour the expulsion of the food.

The ascertained ratio of only one accident been known to occur in 23,204 cases of Ether inhalations, puts the probability of any complication beyond notice.

The operation over, the patient may be allowed to recover gradually, and if the face be sponged with cold water, and the patient soothed when emerging from the influence it will be best.

The time occupied in producing insensibility by the inhaler varies a little, and some patients seem to resist somewhat more than others. I have seen very many thoroughly insensible in four minutes—others in five; but if eight minutes be taken as an average, it will be found that few cases indeed will exceed it, while the vast majority will fall short of it. I refer to cases where the Inhaler is used, as I have comparatively tested the cone and sponge with it, and find that not only is the time much longer, but the effects are far less satisfactory, both as to the temporary and after condition of the patient with the cone and sponge; or, in other words, where a free exposure to the vapour is not effected.

I must here remark that the convulsive stage produced by Chloroform inhalation is not seen where Etherization is used by the Inhaler, save in very rare instances; nor is sickness of stomach usual, if the simple precaution be taken of not allowing any meal to be given within a few hours of the operation. Indeed, the result of Etherization cannot be better expressed than by the quotation I have given above from a writer who advocates chloroform:—

"The system gradually lapses into a calm, quiet condition, attended with muscular relaxation, closure of the eyelids, and mental unconsciousness."

When, in addition to these perfect results, it is remembered that it is proved by the hard logic of statistics that *Ether is the safest of all anaesthetics, and eight times more so than Chloroform*, I can hardly conceive that anything further is required to prove its superiority to all other agents.

## THE ETHER INHALER.

is constructed so as to collect the Ether vapour rapidly, and have it inhaled through the flexible tubing, which, with the mouth-piece, suits any position of the patient.

The respiration is allowed to be carried on freely by means of an india-rubber diaphragm at the top of the instrument, which, by corresponding with each respiration, is self-accommodating. The internal arrangement is such that ample provision is made for the collection of the Ether vapour.

When about being used, pour in *gradually* two fluid ounces of anhydrous sulphuric ether, if for an adult, but proportionably less for a child or female, and apply the mouthpiece to include the mouth and nose. Should the patient not yield in four or five minutes, pour in another two ounces gradually—more will seldom be required, except during some very prolonged operative procedure. It is desirable to keep the inhaler in the erect position as much as possible.

I am persuaded that any practitioner who employs Ether in the manner I have described will be completely satisfied with the results.

He will also be freed from the incubus of the

## DANGERS OF CHLOROFORM.

He can conscientiously advocate with his patient the employment of an agent which has been proved to be, though hitherto used in an imperfect manner, the

## SAFEST OF ALL ANÆSTHETICS.

He will avoid responsibility and the qualms of conscience which in case of a fatal issue from using the more dangerous remedy, Chloroform, must result to him, indicated in the truthful and touching remark of a practical surgeon when relating the fatal effects and dangers of Chloroform which he himself witnessed:—

"The use of Chloroform is a serious business, involving as it does the issues of life and death—how serious few can realize, except those who have seen one or more fatal cases;" and "witness that sad sight when a person lies dead before them, who but a few minutes before was in full possession of life and strength.\*"—*Medical Press and Circular*.

*Traumatic Hemorrhage of the Rectum.* By WILLIAM

BODENHAMER, A.M., M.D., New York.

PROFUSE or alarming hemorrhage of the rectum, consequent upon surgical operations on its inferior extremity, is by no means a rare occurrence. It is often a very grave affair, requiring

\* Mr. Cline, *Am. J. Surg.*, vol. 1, p. 100.

sometimes the most prompt and energetic measures for its arrest; and if not speedily arrested, leading ultimately to great exhaustion, syncope, and even death. When it is external, or nearly so, it is easily managed; but when it is entirely internal, owing to the narrowness of the anal canal, and the considerable distance up the same of the bleeding wound, it is difficult to get at it; the natural warmth, too, of the intestine itself favors the bleeding; and in consequence of the morbid condition, sometimes, of the blood vessels themselves it is often persistent and difficult to suppress. Surgical hemorrhage of the rectum, then, is to be dreaded, as well on account of the several discouraging circumstances already named as on account of its being so very insidious, neither the surgeon nor the patient being for some considerable time aware of it, no blood escaping externally to indicate it, or to cause alarm.

The source of the bleeding is generally from one of the hemorrhoidal arteries, yet it is very often almost entirely venous. I have seen large quantities lost in a few minutes after the division of a hemorrhoidal vein. The arteries of the rectum are more numerous and of larger size than in any other portion of the intestinal canal, and being chiefly distributed to the posterior part of the rectum, some of their branches may be divided in the operation for anal fistula, sometimes causing serious hemorrhage; indeed operations on the ano-rectal region are almost always attended with more than ordinary bleeding. There is sometimes an enlarged and varicose condition of the proper veins of this region, especially in old persons and in those who are suffering from diseases of those parts—such as anal fistula, rectal stricture, hemorrhoids, stone in the bladder, etc. In such cases there is generally great induration of the parts, from inflammatory deposits, involving more or less the hemorrhoidal vessels themselves; and consequently when such vessels are divided they are, from this cause, unable to retract and contract, and the result is alarming hemorrhage. Several instances of this character have fallen under my own observation.

In rectal hemorrhage the blood usually flows into the inferior and middle portion of this intestine, from which, however, it may sooner or later be expelled, either in a semi-fluid or coagulated state; or it may accumulate in large quantities in the superior portion, and in the sigmoid flexure of the colon by regurgitation. It is surprising with what persistency the bleeding continues in some of these cases, even when no large vessels are implicated.

As before observed, this accident often follows the operation for fistula in ano, especially when a sinus has been divided high up. It is also very liable to follow the excision of hemorrhoidal or other tumors of the anus and rectum by knife or scissors. Serious hemorrhage is sometimes the result of dividing a stricture of the rectum, when high up. It often follows the division

of the sphinctores ani muscles for anal fissure, and the operation for perineal artificial anus.

Many patients have perished from rectal hæmorrhage, as the records of surgery show, and many more have perished from this cause of whom no record exists. Some of these fatal cases were doubtless lost, either through ignorance on the part of the operator of the proper measures to be adopted in such a case, or through a want of presence of mind and firmness in him, to insist upon, and promptly to execute the appropriate means. I could here cite numerous examples to prove how alarming, how dangerous, how injurious, and how fatal this hæmorrhage has been.

Such was the constant dread of rectal hæmorrhage that the celebrated Baron Dupuytren, who invariably removed hæmorrhoidal tumors with the scissors, never neglected the precaution of either at once applying the heated iron to the wounded parts, or leaving an assistant with the patient in order to arrest the bleeding by the same means should it occur. Indeed this distinguished surgeon recommended the actual cautery to be applied to the wounded surfaces in every case immediately after each operation of the kind, as he found its application absolutely necessary in nearly every patient upon whom he operated, in order to arrest frightful hæmorrhage; and for this purpose had special canteries constructed.—(*Lecons Orales de Clinique Chirurgicale*. Tome i., p. 357. Paris, 1832.) The same dread of hæmorrhage induced Sir Astley Cooper to reject the use of the knife and scissors altogether in the removal of hæmorrhoids, and to adopt instead the use of the ligature. This great and good surgeon was candid enough to admit in his lectures the loss of several of his patients from hæmorrhage, consequent upon excision of hæmorrhoidal tumors.—(*Surgical Lectures*. By Tyrrell; p. 301. Philadelphia, 1839.) The late Sir Benjamin C. Brodie says he nearly lost three patients from rectal hæmorrhage, following the excision of hæmorrhoidal tumors.—(*Clinical Lectures on Surgery*, p. 314. Philadelphia, 1846.) The late able and distinguished Mr. Syme considered that serious and fatal hæmorrhage was exceedingly liable to follow excision of hæmorrhoids.—(*On Diseases of the Rectum*, p. 77. Edinburgh, 1854.) Mr. Fergusson, with the same dread of rectal hæmorrhage before him, says: "I have an equally strong opinion as to the impropriety of cutting internal piles with the knife or scissors. There may be such an internal bleeding as to endanger life, as I have myself experienced; yet while I admit that such a practice may be followed again and again without mischief, I would earnestly caution the young surgeon against rashness in this respect. In one instance, having become emboldened from using the scissors with impunity in a variety of cases, I nearly lost a patient from hæmorrhage into the rectum, from a small portion of a wound in the mucous membrane, which passed within the sphincter. On cleaning the rec-

tum from a large collection of blood, and applying ice, the bleeding stopped; but probably this was as much the result of the faintness from loss of blood as from any such surgical means that were adopted."—(*A System of Practical Surgery*, p. 549. Philadelphia, 1853.) The late Dr. Bushe says, "that excision of hæmorrhoidal tumors not likely to be attended with hæmorrhage, I deny, for I have performed the operation several times, and after it, have had to tie up arteries, plug the rectum, and in one instance to apply the actual cautery. Indeed, I so nearly lost two patients, that when left to my own choice I no longer have recourse to this operation."—(*A Treatise on the Malformations, Injuries and Diseases of the Rectum and Anus*, p. 183. New York, 1837.) The following pertinent remarks upon this subject are from the able and distinguished Professor N. R. Smith, of Baltimore: "Excision of hæmorrhoids is the expedient that first presents itself. But for one circumstance—the danger of hæmorrhage—this would be the shortest and most effectual expedient. This has been in times past much practised, and often with success. But the occurrence of many fatal cases of bleeding has deterred the modern practitioner. Sir A. Cooper's cases are well known, and were all surgeons as candid, we should have many more such beacon lights. Were the bleeding part so located as to be accessible to our remedies, there would be no risk; but when a hæmorrhoidal tumor has been cut away with the knife, the wounded surface retires within the sphincter and is reached with great difficulty."—(*Baltimore Medical Journal*, vol. i., p. 9, January 1870.)

The same dread of surgical hæmorrhage of the rectum led to the invention and the adoption of the *ecraseur* for the removal of hæmorrhoidal tumors. But *ecrasement* by no means always insures against alarming hæmorrhage of the rectum sooner or later after such operation, as the records of surgery abundantly prove.

With regard to the incision of hæmorrhoidal tumors by knife or scissors, particularly if they are large and situated above the sphinctores ani, and a vein has been freely opened, the operator cannot expect anything but a free and copious discharge of blood; the structure of the portal veins facilitating such a sequel to the operation. Attention, however, to the different conditions of the affection, and the relations of the tumors to the anal sphinctores, will always enable the surgeon to be prepared for the hæmorrhage, and to have his means always in readiness to arrest it in case it should follow a properly considered and well-executed operation. In consequence of inattention to these pathological conditions and measures, the worst results have followed, as well as may again hereafter follow.

Were the measures, however, for arresting surgical hæmorrhage of the rectum as well understood and appreciated as they by all means should be, or as those are at the present day for

suppressing such hæmorrhage generally, few fatal cases, in my opinion, would ever be likely to occur, whether either knife or scissors were used.

*Symptoms.*—Besides the characteristics which are common to all internal hæmorrhage, that of the rectum has peculiarities which enable it to be readily distinguished from all others. In the largest number of instances from one to four hours elapse after the operation before the symptoms indicating rectal hæmorrhage begin to manifest themselves. The patient, after having recovered from the excitement and fatigue of the operation, and perhaps after having been comparatively comfortable for some time, has now a tendency to drowsiness, or becomes anxious, agitated, and restless; he has tingling of the ears, swelling, tension, and sensibility of the abdomen, especially in the left iliac fossa; and is sometimes conscious of a sensation of warmth or heat extending gradually along the bowel from below upwards; has perhaps colic pains, with a painful kind of tenesmus and frequent desire to evacuate the bowels with more or less inability to do so; his pulse is intermittent or irregular. Sooner or later, unless relieved, other and more marked symptoms supervene. There is now a tendency to stupor, and a deadly paleness overspreads the patient's face, which, together with the whole surface of the body, is often bathed in cold perspiration; his respiration becomes hurried, difficult, and anxious; his pulse small, frequent, and almost imperceptible; he sometimes has nausea and vomiting; is seized with rigors, spasms of the extremities, and vertigo. Such phenomena cannot well be misinterpreted by the surgeon, inasmuch as they plainly indicate that alarming hæmorrhage is going on within the rectum, and that the blood in the mean time is accumulating in the colon. The patient may die without even discharging the contents of the bowels; but in most instances the tenesmus becomes so great that he makes efforts to stool, and evacuates a large quantity of clotted blood, and whilst doing so, often faints, which, for the time being, opposes a barrier to the further effusion. More frequently, however, when the intestine is relieved of its contents, especially if this has been effected in the recumbent or horizontal posture, a sense of general ease and comfort is the immediate consequence, and the only well-marked remaining symptom is that of great prostration. Should the surgeon now neglect to avail himself of this precious truce in arresting the bleeding promptly, the symptoms will be almost certain to reappear speedily, and if possible more alarmingly than before, and the patient's previous restlessness will often be followed by feelings of despair; and the depression consequent upon this will sometimes be such that he will even pray that death might come to his relief.

*Suppression of the Hæmorrhage.*—The measures for arresting rectal bleeding differ, and may be comprised in the following:

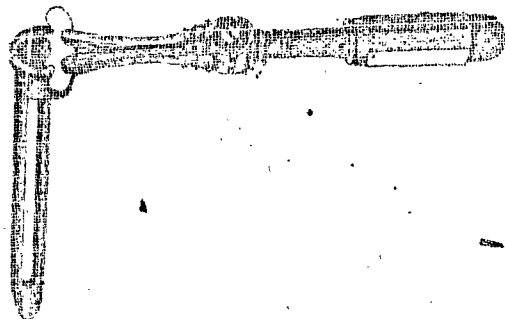
1. *Ligation*; 2. *orsion*; 3. *Cauterization*; 4. *Compression*; 5. *Styptics*; and 6. *Cold Applications*.

The ligature, twisting, and the actual cautery are the chief measures, however, upon which to rely in alarming cases. But as cauterization with the iron is almost certain to be followed by high inflammation, if not by sloughing and contraction, it should be employed only as a *dernier resort*. Torsion is as efficient and as reliable as ligation, when the vessel is small and sound. It is especially indicated in cases in which the bleeding is so deep that the vessel cannot be tied.

Should the operator entertain the slightest suspicion that internal rectal bleeding is taking place, he should at once direct the patient to evacuate the bowel if possible. Should the patient, however, fail in accomplishing this by the natural efforts, an enema of one or two pints of cold water, or salt and water, should be administered, and if necessary, repeated every few minutes, until the rectum becomes so stimulated as to completely expel its contents, which, if hæmorrhage has been going on, will generally be found to consist of a greater or less quantity of coagulated blood. The patient thus by his straining efforts might perchance force down the bleeding wound sufficiently low so as to be seen; should he fail, however, in this, in consequence of the wound being too high up, the operator should then endeavor to pull down the rectum gently, by means of a vulsellum or pronged hook inserted into the submucous tissue, until the bleeding point was fairly brought into view, and then the vessel either ligated, twisted, or cauterized, as he might select. This method sometimes happily succeeds. The great difficulty, however, in some instances, is to ascertain precisely whence the bleeding proceeds, especially when from small vessels and at several points. Nothing but a minute examination of the interior of the rectum by means of a proper speculum will enable the operator sometimes to detect the bleeding point or points, unless the hæmorrhage proceeds from a large vein, or from a considerable artery, as indicated by the peculiar jet or scarlet color of the blood.

Failing by the above process, and with the intention now of employing the speculum, the rectum and bladder both having been previously emptied, the patient should be placed upon his left side, on the edge of a bed or table, in front of a strong light; the back and hips as near the edge as possible, the pelvis elevated, the head and shoulders depressed to favor the action of the heart and the return of the blood to the brain, and the thighs flexed upon the abdomen. A piece of rubber or oil-cloth, if at hand, or something else, should be placed under the hips, so as to protect the bed from the fluid discharges, and a vessel placed at the bedside to receive them. It is also important that a free access of air should be provided in the room. The patient being in this position, the operator should intro-

duce into the rectum the tri-valve trellis speculum (Fig. 1).



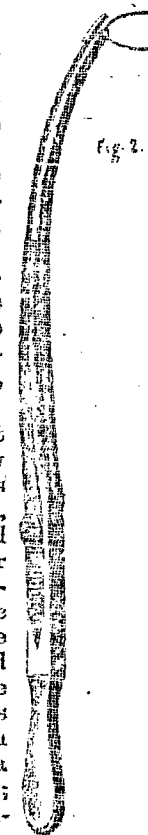
which I devised a number of years ago especially for this purpose. This instrument is quite small when closed, and easy of introduction, and when introduced admits of extensive expansion by simply revolving the handle. By it, when the blades are widely expanded, all the sides of the interior of the rectum are at once brought into view; and by the aid of a sponge mop the exact source of the bleeding may be easily discovered. The speculum, thus revealing the true state of the case, gives the operator great advantage in controlling the hemorrhage, by giving him confidence, courage and hope. He sees when the effusion comes, and makes an estimate of the quantity being lost, by what passes out through the opened anal orifice, as no internal accumulation can now any longer take place. If he should thus find that the effusion is not very great nor alarming, cold applications in the form of irrigation might be employed before resorting to ligation. This generally arrests ordinary, and sometimes even extraordinary bleeding. The iced-water should be directed through the open speculum upon the bleeding point in a continuous stream from a Davidson syringe. If the stream is made directly upon the wound, it has a powerful tendency to promote the contraction of the bleeding vessel, to allay pain, and to prevent inflammatory action. This course, if successful, should be continued until the hemorrhage entirely ceases, and then the speculum should be partially closed and carefully withdrawn. If the hemorrhage, however, is found to be rapid and alarming, the bleeding vessel must at once be tied, twisted, or cauterized before resorting to irrigation.

**Ligation.**—For the purpose of seizing and ligating a bleeding vessel some considerable distance up the rectum, I use instead of the common tenaculum the long and slightly curved spring forceps (Fig. 2.) which I had constructed especially. It has a sliding attachment, intended chiefly as a *porte-ligature*, lying flat

upon its upper blade, and nearly of the same length. This attachment at its distal end has a beak for holding and carrying the loop of the ligature; near its centre it is armed with two narrow flanges which partially embrace the lower blade of the forceps; and near its proximal extremity it has a rough button, by means of which the slide is projected as far as necessary for carrying the loop of the ligature, and also retracted; by these two movements the blades of the forceps may be locked and unlocked, as may be desired.

The operator, seeing the bleeding vessel through the speculum, seizes it with the forceps previously armed with a suitable silk ligature of sufficient length, and having the proper noose in the centre of it. He now projects the slide, by which movement he locks the blades, and carries the ligature to the seized vessel. He then places the locked forceps into the hand of the assistant who holds the speculum, and whilst holding both ends of the ligature in his left hand, and with a long probe in his right, disengages the noose from the beak of the *porte-ligature* and places it upon the base of the seized vessel, and when properly adjusted, tightens the knot firmly by means of Dr. A. L. Carroll's admirable *knot-tyer* (Fig. 3). A second knot, if deemed necessary, may be made and tightened in like manner. When the vessel is secured the rectum should be well syringed out with cold water, and if the hemorrhage has entirely ceased, the speculum should be carefully withdrawn, leaving the two ends of the ligature hanging out of the anus. In the mean time the patient should maintain the horizontal posture, take an opium pill, live on a milk diet, and avoid a fecal defecation for several days.

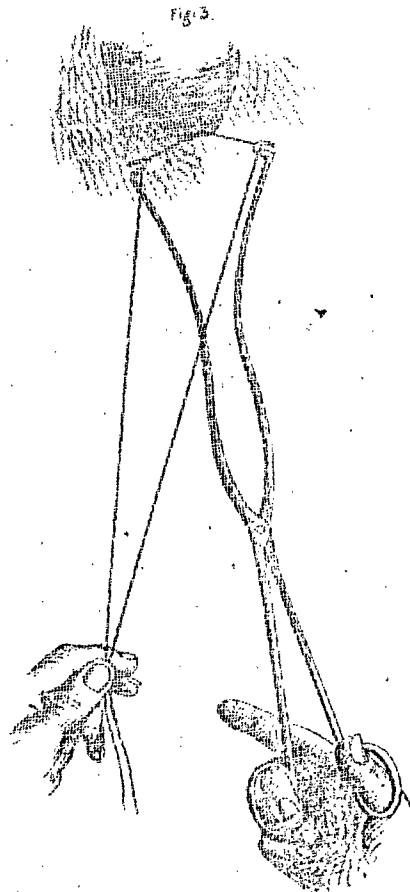
Should Dr. Carroll's instrument not be at hand the knot may be tied as tight as necessary by a method I have practised for many years in ligating polypoid tumors of the rectum, which is as follows:—The vessel being seized with the forceps as above directed, the operator hooks one end of the ligature in the cleft extremity of the silver director or *sonde cannelée* which he holds in his right hand, whilst the other end of the ligature is held in his left, and sufficient traction made upon each at the same time as to tighten the knot firmly. In this manner a bleeding vessel may be seized with the forceps and secured with the ligature at a distance of four or five inches up the rectum; or a polypoid or pile tumor may be ligated almost as easily and as effectually as if it were at the verge of the anus.



*Torsion.*—If the operator prefers torsion to ligation, it can be efficiently performed by means of the spring forceps already named, or by Physick's forceps.

*Cauterization.*—If neither ligation nor torsion can be made available, and the hæmorrhage is alarming and threatening life, the actual cautery should without hesitation be at once employed. The cautery iron should be heated to a white heat, and applied to the bleeding vessel through the opened speculum, being very careful to seal it completely. The severe smarting pain, the constipation, and the retention of urine which follow the application of the actual cautery should be combated by proper means. To relieve the severe pain, anodynes and emollient applications must from time to time be employed. Constipation must be relieved by linseed enemata and castor oil; and *ischuria* and *dysuria* by tepid baths, fomentations, and, if necessary, the catheter; and the tendency to contraction, by the use of the bougie.

The cauterization may also be thoroughly effected by the *galvano-cautery* of Middeldorp.



4. *Compression.*—This method of arresting rectal hæmorrhage is valuable, if properly applied and maintained in sufficient force. It is especially applicable to deep-seated bleeding, and in such cases, in which other methods have failed, it should by all means be attempted. It is, however, in rectal bleeding obnoxious to several serious objections:—

1. The parietes of the rectum upon which the compression is made are not firm and resisting enough to make it as completely effectual as would be desired, but are, on the contrary, yielding and distensible to an almost indefinite extent.

2. The pressure, being from the interior to the exterior, is very difficult of accomplishment.

3. The rectum will scarcely ever tolerate in its cavity the presence of any apparatus for making compression. The incessant involuntary expulsive efforts which such a foreign body provokes and, which cause so much inconvenience and suffering to the patient, unless constantly kept under the influence of extraordinary doses of opium, are almost certain to result in its forcible expulsion.

4. Even should the compressing apparatus not be expelled by the involuntary efforts of the patient, it is absolutely necessary for it to be frequently removed, to allow of defæcation.

5. In some instances, notwithstanding the presence of the compressing appliance in the rectum, the internal bleeding may still continue to go on for a considerable period without being detected, and in this way may, for the time being, prove deceptive, and precious time be lost.

*Tamponnement.*—Several methods have been devised for plugging the rectum, with a view of making compression, and arresting rectal hæmorrhage. For this purpose the *tampon*, *pelote*, or plug, composed of various materials, is generally employed.

A very ingenious method of making compression by means of a kind of double *tampon*, in cases of rectal hæmorrhage, consequent upon the excision of hæmorrhoids, was first suggested and successfully employed by M. Petit, a century ago.—(*Traité des Maladies Chirurgicales*. Tome ii. p. 128. Paris, 1790.)

This method of Petit was subsequently simplified and improved by M. Boyer.—(*Traité des Maladies Chirurgicales*. Tome vi. p. 556, 5th Ed. Paris, 1849.)

For the same purpose M. Desault employed with success a *tampon* composed of a square piece of linen, the centre of which was introduced into the rectum, and filled with lint; after which the corners of the same were strongly pulled against the buttocks, and secured by a bandage.—(*Ouvres Chirurgicales*. Tome ii. p. 417. Paris, 1813.)

A modification of the methods of MM. Petit, Boyer, and Desault was made by our own countryman, the late and lamented

Dr. Barton, of Philadelphia. His method is as follows:—"Take a sufficient number of pledgets, made from portions of a common roller-bandage, or other piece of muslin, about two inches in width, and long enough, when loosely wound, to gain ready admittance into the rectum. Let each pledget be secured by a ligature, tied round the middle of the roll, and long enough to leave several inches of the ligature freely dependent from the anus. Introduce these pledgets, previously thoroughly oiled, one after another, into the rectum, until the lower part of that viscus is distended by the muslin, leaving the free ends of the ligatures hanging from the anus. This being done, divide the projecting ends of the ligatures, carrying one-half their number toward the right hip, and the other half toward the left; then take a large pledget or smaller roller, firmly wound, and place it between the parted ligatures, with its axis in the antero-posterior direction; lastly, gather the ligatures from the opposite sides of the anus and tie them across the external pledget with sufficient firmness to arrest the hæmorrhage."—(*American Cyclopædia of Practical Medicine and Surgery*. Art. Anus, vol. ii. p. 115. Philadelphia, 1841.)

I have made and used the following *tampon* successfully on two occasions:—"Take a strip of the cotton or linen cloth about nine inches long, and about seven inches wide, sew it up in the form of a bag or purse, wet it, lubricate it with the white of eggs, and introduce it into the rectum some distance beyond the bleeding point by means of a slightly forked slender rod, and then, with the same, stuff the upper portion of the sack tightly with lint, cotton, wool, or tow; afterwards draw on the perineal portion of it, as if pulling it out, until sufficient compression is made from above downwards, to arrest the hæmorrhage. It should now be maintained firmly in this position by a proper compress and T-bandage. To remove the *tampon*, a portion of its contents must first be taken out, which can be very easily done by means of the common dressing forceps. The *tampon*, however, should not be disturbed, if possible, for several days, and measures should be adopted to keep the bowels confined for that period.

Mr. Allingham of St. Mark's Hospital, London, recommends the following method in secondary rectal hæmorrhage:—"When called to see a case of this kind, always arm yourself with a full-sized bell-shaped sponge and plenty of cotton wadding: take also some persulphate of iron; or if you have not that, powdered alum. Thread a strong silk ligature through, near the apex of your cone-shaped sponge, and bring it back again, so that the apex of the sponge is held in a loop of the thread. Then wet the sponge, squeeze it dry, and powder it well, filling up the lacunæ with iron or alum. Pass the forefinger of your left hand into the bowel, and upon that as a guide, push up the sponge—apex first—by means of a metal rod, bougie, pen-holder, or a

rounded piece of wood, if you can get nothing better. Now this sponge should be carried up the bowel at least five inches, the double thread hanging outside the anus. When this is so placed, fill up the whole of the rectum below the sponge thoroughly and carefully with cotton wool, well powdered with the iron or alum. When you have completely stuffed the bowel, take hold of the silk ligature attached to the sponge, and while with one hand you pull down the sponge, with the other push up the wool. This joint action will spread out the bell-shaped sponge, like opening an umbrella, and bring the wool compactly together; if this is carefully done no bleeding can possibly take place, either internally or externally."—(*Fistula, Hæmorrhoids, and other Diseases of the Rectum*, p. 122. London, 1871.)

A pig's bladder, softened in warm water and introduced into the rectum, and filled with *charpie*, makes a good *tampon*; it was first used with success by M. Levret, and subsequently recommended and used by M. Dupuytren (*loc. cit.*) and others. The bladder may be filled with either lint, air, or water.

Upon the same principle, the late Dr. Bushe invented a very ingenious instrument for making compression in rectal bleeding (*op. cit.* p. 185).

*Digital Compression.*—Direct compression by means of the finger or fingers, introduced into the rectum, cannot be considered as a methodical proceeding. It constitutes, at best, but a temporary means until the operator can have recourse to a more energetic plan. The operator should introduce the first and second finger of his right hand into the rectum, and make firm pressure upon the bleeding wound, and at the same time urge the patient to make efforts to draw up the anus, or to contract the sphincters as closely as possible, and thus endeavour by these two forces to compress the bleeding vessel or vessels. It is true that digital pressure, unless it is maintained by a relay of assistants, is very inconvenient and fatiguing to the operator, but as it sometimes succeeds well, it should be resorted to. If by this proceeding the hæmorrhage is arrested, the fingers, after having remained in the bowel from one to two hours, may be carefully withdrawn, and small bags of ice applied to the anus.

5. *Styptics.*—The considerable depth at which the bleeding occurs in rectal hæmorrhage renders ineffectual, to a great extent, those hæmostatics to which recourse is had when the source of the bleeding is less deeply seated.

When the effusion proceeds from small vessels, and at numerous points, it may often be suppressed by the insufflation of a powder composed of equal parts of alum and tannin, or by powerful astringent injections. Mr. Carling, Surgeon to the London

Hospital, recommends the following as a valuable injection in obstinate rectal hæmorrhage:—

|                    |      |
|--------------------|------|
| R Tannic acid..... | 3j.  |
| Alcohol.....       | 3ij. |
| Aque .....         | 3j.  |

Fiat injectio.

6. *Cold Applications*.—These, even as adjuvants, are highly valuable, and cannot be dispensed with whilst the hæmorrhage continues. The cold applied in the form of irrigations I have already recommended and described. Small bags of ice should be constantly kept applied to the anal region as well as to the thighs.

To conclude, the patient during the whole treatment should be required to maintain strictly the recumbent or the horizontal posture, and to freely use acidulated drinks. Full doses of opium, or opium combined with the acetate of lead or gallic acid, should be administered. These are measures that should never be omitted, inasmuch as they constitute a very important part in the treatment of all traumatic hæmorrhages. In great prostration the treatment must be stimulating. A smelling-bottle must be held to the nose of the patient, and if he can swallow he must take large quantities of brandy, either alone or in union with ammonia. These remedies may be aided, if necessary, by the application of heat, friction, and sinapisms to the spine as well as to the præcordial region, measures which will generally soon restore him. When reaction begins the patient must be carefully watched, lest over-stimulation take place, followed by excessive nervous and sanguineous excitement. I would once more observe, before closing, that some cases of rectal hæmorrhage admit of no delay whatever, being quite alarming from the commencement, by rapidly exhausting the patient. Such cases require the most prompt and vigorous action, or all will be lost; hesitation or indecision would be fatal. The means already pointed out must be put into immediate force; the rectum must be thoroughly emptied of the blood; the anus must be dilated with the speculum, the bleeding vessel or vessels, if possible, taken up by ligature; or, if this is impossible, the actual cautery must be resorted to, or compression, astringents, and cold applications must be employed and steadily persevered in until all danger is over.—*Medical Record*.

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#### Tobacco.

According to German statements, in case of juvenile smoking the blood corpuscles, lose their round shape and become oval and irregular at their edges; while instead of mutually attracting each other, and running together in rouleaux they cohere loosely,

or lie scattered on the field of the microscope. The following facts show its deleterious effect on the brain.

M. Bertillon found that 102 of the pupils attending the Polytechnic at Paris smoked, while 58 did not. Arranging the two categories in order of merit, according to the results of examinations, he found in every grade non-smokers held the higher rank, and that the smokers, compared with the non-smokers, deteriorated from their entering to their leaving the school. Facts like these induced the Minister of Public Instruction to issue to the directors of colleges and schools throughout the empire a circular forbidding tobacco to students, on the ground that the physical and intellectual development of many youths had been checked by its use. Amongst ourselves the habit is getting too common, with the results of impaired eyesight, thinning of the hair, and other symptoms of excessive draughts on nerve centres. But how is the habit to be stopped when meerschaum pipes are even given for prizes in Sunday schools?—*Medical Press and Circular*.

#### A new method of Nourishing Patients per Anum.

Dr. W. O. Leube, of Erlangen (*Deutsches Archiv. für klin. Med.*) has made recent investigations on the nourishment of patients per anum with an injection-mass prepared in the following manner: With the object of introducing into the large intestine nutritive material resembling its ordinary contents, and of establishing, as far as possible, natural conditions in this part of the alimentary canal by artificially produced digestion, he has endeavoured to transfer to the large intestine a part of the digestive processes which normally take place in the small intestine.

From 90 to 100 grammes of the pancreas of the pig or ox are carefully deprived of fat, and finely minced. Then from 150 to 300 grammes of beef are minced and grated. Both substances are then rubbed down in a mortar with some warm water, in order to form a thick soup, which is taken up into a clyster syringe, furnished with a wide opening. If it is wished to submit, at the same time, fat to digestion, from 25 to 50 grammes of this substance may be added. Starch likewise may be added. A purgative enema is to be administered one hour previous to this nutritive clyster.

His experience clinically in the use of this mode of feeding is as follows:—

1. The injected mass, when it consists of nothing more than meat and pancreatic substance, never causes any diarrhoea, but, on the other hand, generally remains in the large intestine from twelve to thirty-six hours without giving rise to a stool.

2. The patient experiences no disagreeable sensations after the injection, but rather a feeling of ease in the abdomen. In every case, he says he made out that the pulse became fuller, that there was an improvement in the general condition and spirits of the patient.

3. The clysters are not well borne at first; the least digested portion of the injected mass being returned.

4. The above-described injection-mass is superior to other substances recommended for rectal injections, through its efficiency, and the readiness with which it can be made.

Since the publication of the above paper by Dr. Leube the *Centralblatt für Med. Wissenschaft* of July 20th contains another article from him on the same subject, in which he says, that in the warmth of summer the pancreas begins very soon to undergo decomposition, and in consequence loses its digestive power and becomes irritating to the intestine, producing rapid expulsion of the material injected. These mishaps may easily be avoided by making a glycerine extract of the pancreas. This extract is quite equal in digestive power to the fresh pancreas, and will remain good for several weeks. The following is the manner of preparing this extract in glycerine. The pancreas of a bullock (which is sufficient for three enemata) is finely chopped and rubbed with 250 grammes of glycerine; and to each third of this, when about to be used, are added from 120 to 150 grammes of finely divided meat. It is important that this mass should be injected into the intestine as soon as it is made; for if it is allowed to stand the meat swells and the operation is thereby rendered difficult.—  
*Medical Record.*

*Extract from Official Diary of E. S. TRIBE Esq., Deputy Inspector General Indian Medical Department Nag-pore Force.*

Thursday, 14th November 1872. "Visited the Hospitals of the 1st Regiment L. C. and of the R. W. 32nd Regiment N. I. In the former there has, I regret to say, been another case of Hydrophobia, in which the relief afforded by Chloral Hydrate was even greater than in the former case."

## MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

### Pay.—British Medical Staff Officers.

18th October 1872.

No. 1088 of 1872.—The following Military letter from the Right Honorable the Secretary of State for India, is published for general information:—

MILITARY.

No. 178.

INDIA OFFICE,

London, the 10th September 1872.

To His Excellency the Right Honorable the Governor-General of India in Council.

MY LORD,—I have received and considered in Council your Lordship's Military letter, No. 116 of the 1st July 1872, on the subject of the rate of pay admissible to British medical staff officers holding administrative appointments in India, the tenure of which is limited to five years.

2. On a consideration of the orders already published on the subject quoted in the margin, I have resolved that these officers, when absent from India, shall be placed on a similar footing as regards furlough allowances as officers commanding divisions and brigades, and shall be allowed to receive, during the period of their absence on medical certificate, which is to be restricted to six months, their Indian allowances and half staff salary. During absence on private affairs, which is to be limited to four months, no pay will be issued.

3. In no case will more than one grant of leave out of India be allowed.

4. As stated in your G. O., No. 1037 of 24th November 1871, these officers will, on arrival in England, be examined by a Medical Board, and, if reported unfit for further service

\* Madras G. O. G., No. 235, dated 5th December 1871.

\* in India, they will be removed from the Indian Establishment.

5. With regard to the inquiry contained in your despatch under reply, I have to inform you that, British medical staff officers appointed to India, subsequent to the publication of the Rules of 1868 have not the option of electing the Furlough Rules of 1854.

#### **Inspectors-General of Hospitals.—Pension.**

No. 1089 of 1872.—Under the authority of the Right Honorable the Secretary of State for India, it is hereby notified, with reference to G. G. O., No. 825\* of 1869, that Inspectors-General or Deputy Inspectors-General of Hospitals, who have completed their tour of service, may at once proceed to England and qualify for higher pension on British pay, instead of remaining in India on unemployed pay for six months.

#### **Servant's Allowance—Medical Staff Officers.**

25th October 1872.

No. 1111 of 1872.—The following paragraph of a Military letter from the Right Hon'ble the Secretary of State for India, No. 166, dated the 22nd of August 1872, is published for general information :—

Para. 7. With reference to your G. O. No. 426, dated 17th April 1872, I forward, for your information, copy of correspondence with the War Office, from which you will observe that I have sanctioned the grant of servant's allowance at the rate of 1s. 6d. a day for two servants to British medical staff officers on the voyage to and from India, when such officers have the relative rank of Major-General.

#### **Officers.—Furlough.**

31st October 1872.

No. 1131 of 1872.—The following paragraphs of a Military letter from the Right Hon'ble the Secretary of State for

\* Madras G. O. G., No. 256, dated 24th August 1869.

India, No. 130, dated the 10th September 1872, are published for general information :—

Paragraph 8. Officers who may be ordered to return to duty for the purpose of proceeding on field service, may, if they can be spared, be allowed to avail themselves of the balance of their furlough without completing a residence of three years in India from date of last return to duty.

9. The period of the voyage to India when ordered out, and the voyage home when taking the balance of furlough, will be considered as service for pension.

## CORRESPONDENCE.

*To the Editor of the Madras Medical Journal.*

SIR,—I certainly thought that the paragraphs quoted from my own reports, together with my assertion as to what were my views with reference to the meaning of nitric acid in water, would have sufficed to convince any ordinary person that they are not, nor have been, such as Mr. Nicholson has endeavoured to saddle upon me. But no, Mr. Nicholson has declared my views on this question incorrect; he knows better than I do myself what my opinions are, and therefore all that I have advanced on the point must be explained away. And now to my utter surprise it appears that when I approved a water which contained nitric acid, and when I did not ignore the existence of nitrates in the soil of India, I was only adopting and agreeing in the opinion of the Analysts (as if because I happened to agree with an Analyst on any point, it was not conceivable that we could both hold the same views; no, I was simply clinging to the skirts of his knowledge and experience), and when I did not condemn a water which contained nitric acid, I refrained from doing so only because I was afraid of offending an Analyst. In the name of all that is fair and courteous where has Mr. Nicholson found his grounds for this new and insulting attack upon me? What proofs has he of this moral cowardice on my part? Why in the world should I have feared to differ from the Analysts, all, be it remembered, gentlemen, and, which perhaps is less to the point, all Medical officers my juniors, the greater number of them my juniors by twelve or thirteen years, placed by Government under my direction? What mode of argument can I use with a man who tells me I do not know what my own views are, and that, when I have, apparently, been in the right, it is only because I have been afraid to express them?

In the case of the Seetapore waters it was the Analyst, not I, who condemned them. He found nitric acid and ammonia in the waters and attributed their presence to the results of defective drainage, and I, in commenting on his report, wrote the paragraph quoted in my last letter, in which I pointed out that, as nitric acid was present in the soil in the district, its presence in the well waters could not be accepted as evidence of their artificial contamination.

In my last letter I purposely took my quotations from the fourth report only, a report which I knew was in Mr. Nicholson's possession, but as they do not suffice to convince him, here is another from my second report published in December 1867.

Writing of the Agra waters I expressed myself thus:—  
“All the well waters of Agra contain nitric acid in more or less quantity: but I do not believe that this is owing to any thing like sewage contamination of either the soil or of the water in the wells, for the soil itself over that district of country contains nitrates, and there is every reason for believing that under favorable circumstances, such as the soil and climate of Agra present, nitrification may freely occur, though all matters that could in any way be brought under the denomination of sewage may be altogether absent. Still, even in Agra or in any other nitre-producing district, if we find nitric acid in what may be called abnormally large quantity in any one water, we may very reasonably suspect that it is being polluted.”

Now I would ask whether that is not an expression of my own individual views, and of views utterly contrary to those with which Mr. Nicholson would saddle me? If it is not, all I can say is, that words are meaningless, that I do not know what views I have myself held, and that any assertion on my part as to what they are or have been is useless.

With regard to my opinion that “nitric acid has been well called fossil organic matter, but it is a fossil which may be of very recent formation,” I adhere to it, but I have nowhere said that nitric acid is necessarily *fossil sewage*, and I have never condemned a water simply because it contained nitric acid, nor have I anywhere implied that nitric acid in a water is necessarily due to sewage contamination. But, with regard to the Murree waters (to which Mr. Nicholson refers), and the waters of others of our Himalayan Sanitaria, I have no hesitation in saying that the nitric acid in them is largely due to oxidized sewage. Any one acquainted with those Hill stations knows that destitute as they are (or were when I wrote) of public latrines, and of any provision for the removal of night soil, the whole of the night soil is cast upon the hill side, and is thence washed in every stage of putridity and decay into the ravines and water courses on the first occasion of a shower of rain.

In conclusion, and in answer to all that Mr. Nicholson has

said of my non-recognition of the natural presence of nitric acid, and chlorides in varying quantity in the soil, I adduce a precaution which, from the very first, I enjoined upon the Analysts, lest they should fall into those very errors with which Mr. Nicholson charges me. My directions ran as follows:—"Should the water be found to contain nitric acid in any notable quantity it would be well to examine the soil for it. This may be most conveniently effected by digging a shallow well in a place where the access of sewage is impossible, and examining the water which drains into it. The water thus obtained should be examined, as regards the amount of chloride of sodium it contains."

I do not wish to prolong this discussion, for it is, to say the least of it, disagreeable to be charged with blundering stupidity, and ignorance, as in the passage from Mr. Nicholson's letter, which I quoted in my last, or to be insulted with such an assertion as that in the course of my public duty, I suppress my own views, and adhere to others, for fear of offending my subordinates, or any one else, and I must therefore ask you Mr. Editor, if Mr. Nicholson, after reading this letter, still persists in asserting that he has not misrepresented me in the passages just alluded to, that you will decide between us, and close the controversy by a judgment from the Editorial chair.

Yours faithfully,

D. N. MACNAMARA.

CALCUTTA,  
21st November. }

*Extract from Dr. MACNAMARA's, Fourth Report on Potable Waters of Bengal.*

"Seetapore.—Dr. Orton was engaged in analyzing the waters of Seetapore, during March and April; occasional slight showers fell during his visit, but the periodical rains had not set in. The water supply of the station is entirely from wells, and the supply is abundant, and naturally good.

The quantity of solid matter in solution varies from 9 to 19 grains, nitric acid and ammonia were present in the water of all the wells, but the water in the wells had been stagnant for some time previous to Dr. Orton's visit, owing to

the non-occupancy of the cantonments, and this fact may account for the very general presence of ammonia in the water. The nitric acid is present in large quantity in the water of some of the wells, and may be to a certain extent derived from sewage pollution, but I suspect it is present in the soil over the district in which Seetapore stands, and I do not therefore look upon its presence in small quantity in any of the waters as necessarily indicating artificial contamination.

Dr. Orton notices that the wells are badly constructed, needing efficient platforms and drains to prevent waste water running back into them. He also states that the general system of drainage is imperfect, but I cannot think that that proximity to the wells of the drains which are intended to carry off rainfall can affect the drinking water unless the drains are largely put to improper uses, and unless the water remains stagnant in them for some time in the neighbourhood of the wells.

I quite agree with Dr. Orton in his opinion that wells which are used to supply drinking water should be more frequently and more thoroughly cleansed than is now practised: but I do not think it would be possible, as he suggests, to deepen a well every year. Would it not be a good plan to floor the bottom of every pukka well with perforated bricks or stones; it would then be an easy matter to clean the soil every year without meddling with the construction of the well.

The water of well No. 2, in the Artillery lines, (the one between Nos. 1 and 2 Barracks,) differs very much from that of the other wells. It contains double the average quantity of solid constituents;—it contains a large quantity of nitrates; ammonia was largely present in it at the time of Dr. Orton's visit, and the water contains about ten times the amount of common salts natural to the waters of the station: all this makes me confident that the water is suffering artificial contamination, and I think that unless it is found to improve after the well has been thoroughly cleansed, and after every apparent possible source of pollution has been removed, its use as a potable water should be discontinued.

Dr. Orton's report is appended."

(True copy.)

D. W. MACNAMARA.

21st November, 1872.

Extract from DR. ORTON'S reports upon the Waters of  
Sectapore, dated 20th April 1868.

"My investigations into the probable sources of contamination of the drinking water in this cantonment have led me to the conclusion, that of all causes of contamination this place the most active originates in a faulty and imperfect system of drainage, and whenever this is the state of things, of course every well must, to a greater or less degree, suffer.

Now it will be seen from the reports of the Analysis made, that there is a trace of nitric acid and ammonia in the water obtained from every well—very little I allow, but still nitric acid and ammonia. Their presence is not regular to be accidental, and to my mind this fact is indicative of some common source of contamination.

In their relationship to habitations, barracks, baths, cool rooms, latrines, &c., the wells in this Cantonment all very much resemble one another. In addition they are all of recent and careful construction, though capable of still more judicious completion, for instance, they might usefully be provided with covers to keep out dust, leaves, flies, &c. & foreign matters of all kinds and description, which experience has taught us only too readily and easily, find admission through atmospheric, human, and other agency. Again, their stages or platforms might be beneficially furnished with drains to carry off the water which is spilt on the ground or trickles down the outside of the masonry, &c. which, under existing circumstances, percolates the ground round and about, and may possibly find its way back into the well.

But to return to the drainage, which appears to me to be the prime source of contamination here. Upon one occasion when visiting the Lines after a smart thunder shower, particularly observed that the water, though it ran off the barrack enclosures into the trenches or drains constructed for its reception, in these latter, remained stagnant, and this stagnation continued for a period of three days after the rain fell.

Now from personal observation I am satisfied that these trenches are wide, deep, and numerous enough for the purpose, and rapidly fill when occasion requires, but having filled, or rather when partly filled only, the water remains in them for several days, simply because their incline is

hardly sufficient. Of course during the heavy rain, with the impetus of a large and increased volume of water, this defect would be considerably lessened, or rather rendered less apparent, but so soon as the force was diminished or withdrawn, then and then only would the water which they contained begin to stagnate. Now these drains having a varying proximity to the wells, and especially the main or chief one, we may surmise, I think, that if those wells which are most contiguous to the main drain are also the most contaminated, whilst those which are further removed are less so, that the source of contamination may be reasonably sought in the drains, and this having been found, the degree of it may be roughly calculated by the difference in the relative proximity in each case of the one to the other.

The two worst wells I have examined in this cantonment, viz., the one marked No. 2, Royal Artillery Lines, and their second mark, No. 11 B., Cavalry Lines, are, as will be seen from the special reports, attached in much closer relationship with the main drain than any of the other wells in Cantonments. The former contains an excess of soluble salts and nitric acid, with a trace of ammonia, the latter to trace of nitric acid with an excess of ammonia, in both instances no doubt derived from bad or imperfect drainage."

(True copy.)

D. W. MACNAMARA.

1st November, 1872.

To the Editor of the Madras Medical Journal.

SIR,—Permit me to suggest the propriety of your ceasing to permit your valuable journal to be burdened any longer by correspondence on the subject "*Nicholson versus Macnamara*." It is not edifying, and its tone is not pleasant.

If men like to indulge in strong language let them do so by all means, but they should not be allowed to inflict it on the public.

I am, &c.,

CONSTANT READER.

**TO CORRESPONDENTS.**

The Inspector General, I. M. D., *Received with thanks.*  
Assistant Surgeon L. C. NANNEY, "

**BOOKS, &c., RECEIVED.**

The Doctor, *October 1st.*  
 Medical Press and Circular, *October 2nd, 9th, 16th, 23rd*  
 Medical Record, *September 16th, October 1st.*  
 Journal des Connaissances Médicales, *September 30th,*  
*October 15th.*

[illegible]