NEW MEMBER.

One gentleman was nominated.

The following paper was read:

SOME REMARKS UPON A NEW GALVANO-FARADAIC APPARATUS.

By W. CAREY REES, M.D. Melb., and M.R.C.S. Eng.
Honorary Surgeon to the Melbourne Hospital for Sick Children.

Mr. President and Gentlemen,

On September 2nd, 1874, I had the honour to read before this Society a paper on “The Medical Uses of the various forms of Electricity.” During the last three years I am sure that we must all have noticed how much attention has been paid to this subject in all the European schools of medicine. New and improved batteries have been introduced. Two or three new text-books have been written. Systematic courses of lectures have been delivered by Dr. Poore and others, at some of the London hospitals. Medical, not lay, men have been appointed as electricians to the leading hospitals of Great Britain. All indicating that the various forms of...
electricity are being more and more recognised as valuable therapeutic agents.

Of these forms Galvanism and Faradism are those most in practical use, and satisfactory apparatus for producing either of these can readily be obtained.

But up to the present time (so far as I know) there has not been introduced a satisfactory portable combined Galvano-Faradaic apparatus, i.e., a convenient box containing the apparatus required to produce efficient constant and induced currents.

We require the two currents, because it often happens that the one form of electricity will produce the desired effect when the other will fail; for instance, in essential infantile paralysis, the muscles will not at first respond to the induced current, but to the interrupted constant current; but after the use of this for a time, their Farado-contractility returns.

With the kind assistance of my friend Mr. A. M. Henderson, C.E., I think I am able to exhibit a combined battery that will meet most of the exigencies of medical practice.

In order to prove my case, will you pardon me if I just indicate the scientific as well as the practical reasons for adopting this form of combined battery. The satisfactory working of all electrical apparatus depends upon the observance of a number of what may be looked upon as small details, but all of them important. Principal of these is proportioning the size of the cells to the work they have to do, or, to speak scientifically, to the resistance through which they have to work. Thus in the constant battery, which has to work through great resistances, the plates should be of small surface and far apart. To show the necessity of recognising this point in practice, I will quote from Dr. Poore's book, page 13, in which he states "that the resistance of his own body was found to be more than twice as great as that of the Atlantic cable." While in the battery for the induction coil, which has to work through small resistance, the plates should be large and close together.

The great fault of all combined apparatuses hitherto has been the attempt to make one form and size of battery do work in which there is so great a difference.

For the constant current twenty or thirty small cells are required; for the induced current, one or at most two large cells. Instead of this, the twenty or thirty small cells are increased to about double the size, thereby involving greater bulk, greater cost, and yet no greater certainty of action; on the contrary, the cells used for the coil are harder worked than the others, and sooner get weakened; and when in circuit with the other cells for producing the constant current they reduce the strength of the whole series, roughly speaking, on the same ground that the strength of a chain is that of its weakest link. Why not recognise this fact, and fit up our combined apparatus, with separate batteries for the coil and the constant current, each properly proportioned for the work they have to do?

What we then, as medical practitioners, require is a portable combined battery, that can be easily repaired, replenished, cleansed,
kept in thorough working order, with cells so arranged that the risk of spilling the fluid shall be reduced to a minimum, and that does not require to be frequently sent back to the manufacturer, a condition of special importance here, and one which unfortunately debar us from making use of some otherwise very satisfactory forms, such as the Leclanché, chloride of silver, &c.

This restriction compels us to use only the most simple forms of batteries, i.e., those in which the plates are immersed in a single fluid.

Polarisation is the fault to which these are liable, and is a fault which cannot altogether be got rid of. It consists in the deposit of a film of hydrogen on the negative plate (i.e., the copper, carbon, or silver plate, as the case may be.) This film of hydrogen weakens the current of the battery, as it brings into action another current, that due to polarisation, in a direction opposed to the battery current.

Roughening the plate by the deposit of platinum, as in Smee's cell, seems the best means of reducing the film to a minimum. What we must aim at, since we cannot get rid of polarisation, is to make the polarisation current constant. Once polarise our plates by short circuiting the battery for a few seconds, and we can then get a constant current from most batteries, with the exception of those in which carbon forms the negative plate. Carbon absorbs the hydrogen gas into its pores, and instead of a constant polarization current we get one that is variable.

Messrs. Meyer and Meltzer have introduced a combined battery, in which the elements are carbon and zinc plates. It is very portable, but for the reasons stated above there are many objections to its use, and one more particularly that the exciting fluid (dilute sulphuric acid) creeps up through the pores of the carbon plates and spoils the connections. Moreover, the elements are so fixed to the covering board that they are with great difficulty (and with great danger to the very fragile carbon plates) removed for inspection. At page 295 of Althans' book on medical electricity the author points out another very serious objection to this combined battery, that "if anything happened to the combined arrangement the practitioner would be altogether deprived of any source of electricity."

Dr. Tibbitts has introduced a combined battery in which the element used is the Leclanché element, but as that is patented we must send home for fresh elements, and that means a delay of at least five months before we can replace the defective element.

In the battery which I exhibit to-night I have combined in one portable case (12 in. x 9 in. x 11 in.) a constant Smee's battery of thirty cells, and an induction coil with separate cell of zinc and carbon.

The two batteries are quite disconnected, but I have in the one case both a Galvanic and a Faradaic current, always ready for use, easily repaired, cleaned, replenished, and kept in thorough working order, without any special knowledge, except that which anyone with the least mechanical skill can command.
There is one special advantage about this form of constant battery, that if one cell goes wrong, you can, by a simple thumb-screw, take out the faulty element, and bridge over the vacant space by a piece of wire.

Dr. Williams thought the only advantage there was in this battery was that Dr. Rees had got two elements in one case, which, however, was hardly an advantage, for Meyer and Meltzer's battery presented the same in a more compact form.

Dr. McCrea inquired whether one of the smaller Gaiffe's batteries would not effect the same thing? It was certainly an advantage to have the apparatus in a compact form.

In reply to Dr. Williams, Dr. Rees pointed out that not only did Meyer and Meltzer's combined battery contain ten cells less than his, but it supplied both the constant and induced current from the same cells and elements, a most unscientific arrangement, for the reasons stated above, and he again reiterated his objection to the carbon plates, on account of their porosity and fragility. There was no occasion to use Stohr's induction coil. Any ordinary vertically placed coil with accompanying cells could be used. The great point to bear in mind was that the best form of battery used to produce the constant current was, for the reasons stated above, altogether unsuitable for working the induction coil.

EXHIBITS.

Mr. Girdlestone exhibited some Carbolized Kangaroo Tendons, prepared for use in lieu of cat-gut; also some prepared silk and thread for ligature and sutures, and made the following remarks upon them:

The tendons exhibited are from the kangaroo's tail. They have been preserved in carbolic oil, after the manner recommended by Professor Lister in the preparation of cat-gut ligatures.

Suitable tendons may easily be obtained in abundance, there being about ninety in a single tail, from nine to eighteen inches long, of any diameter required. They far surpass cat-gut in strength and durability. These tendons are not split, and as many of them are as fine as ordinary silk ligatures, there is no occasion to split them.

At present I have used them only on a few occasions, but have found that a fine carbolised tendon will remain on an artery for several days without undergoing any material alteration or softening. Knots cast in a tendon hold well without slipping. I believe that tendons will in future supersede gut ligatures, being better fitted for the purpose, although I am not aware they have ever been employed before.

Many surgeons have ceased to rely on ligatures of the latter material because the knots slip, and the gut sometimes softens and breaks down before its services can be dispensed with. I am now making some further experiments with carbolised tendon ligatures, and will report the results to the Society on a future day.
When rendered non-absorbent, in the manner hereafter described, silk is often preferable to any other material for sutures. Owing to density in the structure of either wire or horse-hair, stitches of these substances may be left in situ for a week without causing suppuration in their track. They do not absorb the animal fluids, septic or other, hence they are less irritating than the ordinary silk suture, and do not provoke the formation of pus. But both wire and horse-hair sometimes cause disappointment by breaking during the process of twisting or knotting. Moreover, the removal of a wire stitch from the edges of a tender wound is often attended with no little pain. In a great many wounds horse-hair is not strong enough to hold the parts together, and is therefore out of the question.

Under the impression that if silk could be rendered non-absorbent it would be superior to either silver wire or horse-hair, I made some experiments with various gums, resins, and oils, in which I saturated pieces of silk and thread, which were afterwards used for surgical purposes. The results were decidedly in favour of gum mastic. When thread or silk has been thoroughly impregnated by an ethereal solution of this gum, it is rendered capable of resisting the absorption of animal fluids and septic discharges for several days. The solution or varnish is made by adding gum mastic to pure washed ether, nearly to saturation, in which the threads are immersed completely for twelve hours. They are then removed and allowed to dry. The ether is quickly lost by evaporation, and the gum in the threads becomes rather brittle. They are now dipped, for a second only, in compound tincture of benzoin, again dried, and they are ready for use in a few hours. During the latter part of the treatment, and while the silk or thread is still wet, its surface must be made smooth and uniform by drawing it lightly through the hand. It will remain pliable for days or weeks, but if, from keeping, it has become brittle, a momentary application of the compound tincture of benzoin, as before, will restore it.

The silk now exhibited was prepared in this way. I have used it several times to bring together the edges of large wounds, in the operation for rupture of the perineum, and in other cases where deep sutures of this non-absorbent silk have been left in situ for more than a week, without any irritation or suppuration being set up. It is also a very satisfactory material to tie knots in, which will not slip, and the stitches made with it can be removed when no longer required, without causing any painful traction on the more or less tender parts which they have traversed.

Mr. Fitzgerald thought this was putting marsupials to a better use than making soup of their tails. He had tried carbolized cat-gut, and had not been satisfied with it. He was consulted in a case of aneurism of the carotid, and having determined to tie the common carotid he procured some of Lister's prepared cat-gut for the purpose. He found, however, that the knots opened, and concluded that it was not wise to use this material. The fact of these kangaroo tendons not being twisted would probably be found to be an
advantage sufficient to obviate this result, and he thought, therefore, they ought to be tried.

Dr. McMillan mentioned the case of a patient who had used kangaroo tendon bougies in a case of stricture.

Dr. Jamieson then, on the part of the Special Committee, brought up the following

REPORT ON THE PREVALENCE OF PHTHISIS IN VICTORIA.

At a meeting of the Medical Society of Victoria, held on the 3rd day of October, 1877, it was resolved, "That a committee, consisting of Dr. Singleton, Dr. Williams, Mr. Girdlestone, and Dr. Jamieson, be and is hereby appointed to consider and report upon the whole subject of Phthisis in Victoria."

In accordance with that resolution, the following report is now presented, in which evidence is adduced bearing on the question of the prevalence of phthisis, a point with reference to which contradictory statements have recently been published.

It is doubtful whether there exist at present statistical data sufficient for the final settlement of this question in its different bearings; but an endeavour has been made to collect the evidence so far as it is accessible, and to present it in such a form as to allow of the conclusions herein adopted being easily tested.

It has been considered advisable to discuss separately these two points: I. The comparative prevalence of phthisis in England and Victoria. II. The comparative prevalence of phthisis in Victoria at different periods, for the purpose of showing in how far the disease has increased or diminished.

To facilitate the discussion a number of tables have been compiled from the official returns, which are appended to this report, and which are referred to throughout. The committee have to acknowledge the courtesy of Mr. Hayter, the Government statistician, in supplying the materials from which some of these tables have been constructed.

I. It is not disputed that the rate of mortality from phthisis is considerably lower in Victoria than in England. Table I. shows that, whilst in England and Wales the rate of mortality from phthisis per 10,000 persons living averaged 25.66 in the five years 1860-64, and 22.83 in the five years 1870 to 1874; in Victoria, it was only 13.08 and 12.60 for the same periods. Many circumstances no doubt have helped to bring about this low rate of mortality in Victoria. Thus, the population is comparatively small, and fewer persons are engaged in unhealthy occupations than is the case in England; even in the poorest classes too, almost none need want for abundant and nutritious food. In how far the climate of Victoria is such as to contribute, along with these and other circumstances, to the reduction of the phthisis mortality, is a much-disputed point. It is certain that many phthisical persons claim to have received benefit from a residence in this country. In an indirect
way, also, it may be shown that the climate has something to do with it. The inflammatory affections of the lungs are undoubtedly often caused by certain climatic conditions, and especially by a low average temperature, accompanied by dampness of air and soil. It is now recognised that most cases of phthisis represent really the final stage of some acute inflammatory affection, generally pneumonia, and it is therefore to be expected that where these inflammatory affections are common, phthisis will be prevalent in some direct proportion. The class of diseases of the respiratory system (which does not include phthisis) contains a larger proportion of deaths in England than in Victoria, as appears from Table I., which shows that the rate of mortality, per 10,000 persons living, in England averages about 35, whilst in Victoria it averages little more than 15. It is therefore safe to assume that the low rate of mortality from phthisis in this country is due in part to the comparative infrequency of the diseases of the respiratory system, that again being due to favourable climatic conditions.

It has been supposed, and is said indeed, in the Victorian Year Books for 1875 and 1876, that a fairer comparison would be between all England and the district including Melbourne and its suburbs. This is argued mainly on the ground that the density of population would be more nearly equal. Too much stress is here laid on mere density of population as determining the amount of phthisis in any district. This can easily be shown, from the mortality from this cause in the different registration districts of England and Wales, where the rate does not vary in any direct way with the varying density of population. The following table, giving the number of persons to a given area, and the phthisis mortality per 10,000 persons living in 1875, in the least and most densely populated districts, brings this out very clearly by showing an extreme case.

<table>
<thead>
<tr>
<th></th>
<th>N. WALES.</th>
<th>LANCASHIRE.</th>
<th>LONDON.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population to 100 acres -</td>
<td>22.7</td>
<td>231.7</td>
<td>4571.5</td>
</tr>
<tr>
<td>Phthisis rate -</td>
<td>27.5</td>
<td>26.8</td>
<td>26.6</td>
</tr>
</tbody>
</table>

Of course other districts in England, more densely populated than N. Wales, have a lower mortality; but it is a fair inference that density of population need not by itself count for very much, compared with all the other conditions, in determining the number of deaths from consumption.

It is true that the rate of mortality from phthisis is about the same in Melbourne and its suburbs as in England; but the conditions in the two cases are not fairly comparable. It is certain that a considerable number of phthisical persons are constantly leaving England to die or to reside abroad. The effect must be to reduce the rate of mortality to some extent. On the other hand, Melbourne is the great centre for medical and other charities in the
colony, and therefore persons suffering from phthisis, as from other diseases, come to Melbourne, and in many cases die there. In addition to this influx from the country districts, consumptive cases come from other countries, the total effect being to raise the rate of mortality to a considerable extent. That these and other circumstances tend to raise unduly the Melbourne death-rate is evident, and the following comparison shows that the rate really is disproportionately high. In 1875, the phthisis mortality per 10,000 persons living was as follows:

<table>
<thead>
<tr>
<th>London</th>
<th>England</th>
<th>Melbourne</th>
<th>All Victoria</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.6</td>
<td>22.24</td>
<td>21.46</td>
<td>12.60</td>
</tr>
</tbody>
</table>

It is clear that exceptional circumstances must be at work in making the difference between Melbourne and all Victoria so great when compared with that between London and all England. This is even more clearly brought out by Table VII., which compares the phthisis mortality of Melbourne with that of the rest of the colony, the latter being rather less than one-third of the former in 1871, and considerably less than half in 1861. Probably enough the utter want of anything better than surface drainage in Melbourne has a considerable share in keeping the rate of mortality at such an absurdly high figure. If the exceptional circumstances which operate so unfavourably were absent, the average of the whole colony would be much lower, and would compare even more advantageously with that of England, as given in detail in Table III., where the superiority of the Victorian rate, especially at ages under 20 years, is very marked.

II. The question as to increase or diminution in the mortality from phthisis in Victoria of late years is more difficult of settlement. Sufficient time has not elapsed to allow of a proper comparison, the composition of the population as regards the proportions of persons living at different ages, having been constantly undergoing changes. Even with the data at our disposal, however, it is possible to obtain some useful results; and other points, which must for the present remain uncertain, will perhaps be cleared up after the next census returns are published. Before entering on a comparison of the mortality in different years, as given in considerable detail in the tables appended to this report, it is necessary to refer to a view of the question given in the Victorian Year Book for 1873, where it is settled in a somewhat summary way. It is said there (page 95), "It must be remembered, however, that the population at the ages most subject to phthisis has decreased during the period (1864-73), and therefore the complaint is really more fatal now in Victoria than it was some years ago." In the Year Book for 1875 (page 135), this assertion is somewhat modified. "If it be true that the population as phthisical ages is decreasing, as there is reason to believe, it follows that since the death-rate from phthisis remains unchanged, the
disease in a fatal form must be increasing." The opinion thus stated is based on the fact that between the censuses of 1861 and 1871 the male population between 20 and 35 years of age decreased by 48,766, and the female population between 25 and 30 by 1,394, with the assumption that the rate of mortality is so much higher at these than at other ages, that a corresponding increase in the number of persons living at the more advanced ages will not compensate for this diminution by still equalising the rate. This assumption is not borne out by our tables. Table III. shows the rate of mortality from phthisis at different ages in England and Victoria, with the result that between 35 and 45, the rate of mortality is not at all lower than between 25 and 35 in Victoria; and that even up to 55 it is greatly higher in both countries than it is between 20 and 25. Now, between 1861 and 1871 the number of persons between 35 and 45 increased by 38,535, and between 45 and 55 by 27,739. The assumption being shown not to hold good, it follows that the argument itself falls to the ground; and it is not allowable therefore to assume that the mortality from phthisis has virtually increased, merely because the population contains relatively fewer persons between 20 and 35 years of age. Of course it is true that in 1871 there was a larger proportion of children in the population than in 1861, and it is difficult to balance the effect of that against the increase at the advanced ages; but for the present it must be enough to point out that, according to Tables I. and IV., the average rate for all ages has been perceptibly lower of late years than it was ten years previously.

After having considered this preliminary and more general view of the question, we are in a position to go into a more detailed comparison; and for this purpose it is necessary to take the census years 1861 and 1871, as it is only in them that we have exact details of the numbers living at different ages.

Table III. gives the rate of mortality at different ages, arranged in periods of five years up to 25, and of ten years to 55, following the arrangement adopted in the English returns. Above 55 the numbers are so small that anything like a fair or uniform average can be got only by taking them all together, and this has been done. It appears then from Table III. that at all ages under 15 the rate of mortality from phthisis was very much lower in 1871 than in 1861, less than a fourth between 10 and 15, and about a half and a third at the ages under 5 and between 5 and 10 respectively. Such a uniform result, and such a marked difference, cannot be explained as a mere accident. Between 15 and 20 and at all ages above 35 the advantage is also decidedly in favour of 1871. On the other hand, between 20 and 25, and to a smaller extent between 25 and 35, the rate was lower in 1861. It is therefore a circumstance requiring explanation that whilst at all other ages the conditions, as a whole, were more favourable in 1871 than in 1861 to all under 20 and above 35 years of age, the opposite was the case with those between 20 and 35. The mere statement of the case implies that some disturbing cause must have been in operation, which affected mainly these latter classes.
The explanation of the anomaly is to be found, if at all, in the circumstance that the persons who come to this country, already suffering from phthisis, are the young adults, and especially young men who have not formed ties of family or business, and so can easily travel alone in search of health. This is brought out in a table in the *Victorian Year Book* for 1876 (page 75), where it is shown that of 49 persons (40 males and 9 females) dying of phthisis in Victoria within two years (31 of them within one year), after their arrival in the Australian colonies, 42 were between 15 and 35 years of age, with the probability that they were almost all above 20. We have not the means of determining the figures for the year 1871, but as the merits of the Australian climate were at that time strongly upheld, and had scarcely been at all controverted, as has more recently been the case, the likelihood is, that in 1871 even more phthisical persons arrived than in 1876, with the effect of disturbing to a considerable extent the normal rate of mortality among persons belonging to the classes between 20 and 35 years of age. Such an influx of persons in an advanced stage of consumption would not occur in 1861, when the advantages of Australia as a health-resort had not received much attention. In this we have a feasible explanation of what would otherwise be an inexplicable anomaly.

The very marked difference in the rate of mortality in 1861 and 1871 among children, and young persons under 20 years of age, is of great importance. These classes of the population are not subject to irregularities to any considerable extent, there having been a steady increase in their numbers with the increase of the population. The great and uniform reduction in the mortality from phthisis in children under 15 years seems to be capable of only one explanation, viz., that, however produced, there was less liability to the disease at the second decennial period, and that since the persons under 15 had come to consist more exclusively of those born in the colony, the immunity had become more marked. In 1871 there were 329,597 Victorian-born persons in the colony, almost all of whom must have been under 20, the total number under that age being 363,832. No doubt the proportion of native-born was even greater among those at the younger ages, and among these the improvement in 1871 was most marked. When the populations in and outside of Melbourne are taken separately, as in Table VII., it appears that among the children living in the districts outside of Melbourne, the number of deaths from phthisis in 1871 was so small that it might almost be described as showing a total immunity.

It must be allowed that 1871 happened to be a year showing a rate of mortality below the average, whilst in 1861 it was above the average. The difference was not so great as to explain the lowness of the rate among young persons in 1871; but for the purpose of eliminating, if possible, the accidental variations, caused by the smallness of the numbers when any single year is taken, Table IV. was constructed, showing the average number of deaths per annum at different ages, at two periods of five years each. It was assumed, that by making the census year the middle one of the five in each
case, it would be allowable to take the population in these census years as the average of each five, and the rate per 10,000 was struck on this assumption. The result is to confirm in the main points the conclusions obtained from a comparison of the single years. In particular it appears that the rate among persons under 15, in the second period 1869-73, is only between one-half and one-third of that in the first, 1859-63. There is also the same increase during the second period between the ages of 20 and 35, which is to be explained in part by the influx of phthisical persons from other countries, and also by the fact, that in the latter part of 1861 and in 1862-63 there was a large emigration of adult males, especially to New Zealand, the numbers leaving being so great as to raise the total emigration from 21,689 in 1860, to its highest figures of 38,203 in 1862, with a sudden falling back to about the average amount of 21,779 in 1864. The effect of such a withdrawal of adults, occurring chiefly after the middle of the period, of course was to make the average population in these classes really lower than that of the census year 1861, and so leading to the striking of a rate which is too low. If correction could be made for these disturbing elements, there can scarcely be a doubt that the rate for adults for 1859-63 would, to say the least, have been more equal to that for 1869-73.

On the whole it is fair to state that a comparison of the death-rate from phthisis at different periods shows a great improvement as regards children, due almost certainly to a comparative immunity on the part of the native-born, and about an equality among those above 20 years of age. It is easy to show, as has been done, that in successive years there is a larger proportion of native-born persons among those dying of phthisis, but a mere list of that sort is valueless for the purpose of proving a growing tendency to phthisical disease, unless it can be shown that the increase is greater than the increase of native-born persons in the population. This cannot be the case, since the mortality among young persons, who are now almost all native-born, has diminished. As they advance into the ages above 20, at which the disease becomes most fatal, they must more rapidly constitute a larger element in the lists of deaths from consumption. It certainly speaks well for the vigour of the Victorian-born portion of the population, that in 1871 only 72 deaths from phthisis, out of a total of 841, occurred amongst them, whilst they formed 329,597 out of a total population of 731,528.

The conclusions derived from this report are:

1st. The mortality from phthisis in Victoria is little more than half of that in England.

2nd. The rate of mortality from phthisis in Victoria has been perceptibly less of late years.

3rd. That rate is especially low among persons under 15 or 20 years of age, and has been very greatly reduced between 1861 and 1871.
4th. The reduction of the mortality among young persons is to be explained by a comparative immunity among those born in the colony.

5th. The apparent increase of mortality among young adults is due to the influx of phthisical persons from abroad.

6th. The uniformity in the rate of mortality over the whole colony for a good many years, is owing to certain insanitary conditions operating especially in Melbourne, since for the rest of the colony the rate was reduced by about one-third between 1861 and 1871.

T. M. GIRDLESTONE, F.R.C.S.
JOHN SINGLETON, M.D.
JOHN WILLIAMS, M.D.
JAMES JAMIESON, M.D.

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**TABLE I.**

Showing the annual rate of mortality per 10,000 of population in England and Wales and in Victoria from Diseases of the Respiratory System and from Phthisis, at different periods.

<table>
<thead>
<tr>
<th></th>
<th>England and Wales</th>
<th>Victoria</th>
<th>England and Wales</th>
<th>Victoria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1860-64.</td>
<td>1870-74.</td>
<td>1860-64.</td>
<td>1870-74.</td>
</tr>
<tr>
<td>Resp. System</td>
<td>34·09</td>
<td>36·14</td>
<td>15·90</td>
<td>14·82</td>
</tr>
<tr>
<td>Phthisis</td>
<td>25·66</td>
<td>22·83</td>
<td>13·08</td>
<td>12·60</td>
</tr>
</tbody>
</table>

**TABLE II.**

Showing number of persons living and of deaths from Phthisis at different ages in England and Victoria.

<table>
<thead>
<tr>
<th>Ages</th>
<th>Persons Living</th>
<th>Death from Phthisis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>England 1871</td>
<td>Victoria 1871</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>3,071,276</td>
<td>91,514</td>
</tr>
<tr>
<td>5 to 10</td>
<td>2,706,526</td>
<td>53,265</td>
</tr>
<tr>
<td>10 to 15</td>
<td>2,424,239</td>
<td>34,535</td>
</tr>
<tr>
<td>15 to 20</td>
<td>2,180,412</td>
<td>33,117</td>
</tr>
<tr>
<td>20 to 25</td>
<td>2,004,760</td>
<td>56,147</td>
</tr>
<tr>
<td>25 to 35</td>
<td>3,340,572</td>
<td>150,381</td>
</tr>
<tr>
<td>35 to 45</td>
<td>2,571,155</td>
<td>76,316</td>
</tr>
<tr>
<td>45 to 55</td>
<td>1,997,730</td>
<td>30,820</td>
</tr>
<tr>
<td>Above 55</td>
<td>2,415,596</td>
<td>14,227</td>
</tr>
<tr>
<td>Total</td>
<td>22,712,266</td>
<td>540,322</td>
</tr>
</tbody>
</table>
### TABLE III.

*Showing mortality from Phthisis per 10,000 of population at different ages in England and Victoria.*

<table>
<thead>
<tr>
<th>AGES</th>
<th>ENGLAND.</th>
<th>VICTORIA.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1871.</td>
<td>1861.</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>8.31</td>
<td>3.50</td>
</tr>
<tr>
<td>5 to 10</td>
<td>3.77</td>
<td>1.68</td>
</tr>
<tr>
<td>10 to 15</td>
<td>6.88</td>
<td>4.34</td>
</tr>
<tr>
<td>15 to 20</td>
<td>23.98</td>
<td>8.15</td>
</tr>
<tr>
<td>20 to 25</td>
<td>33.33</td>
<td>12.64</td>
</tr>
<tr>
<td>25 to 35</td>
<td>41.33</td>
<td>20.41</td>
</tr>
<tr>
<td>35 to 45</td>
<td>39.98</td>
<td>23.84</td>
</tr>
<tr>
<td>45 to 55</td>
<td>33.02</td>
<td>24.98</td>
</tr>
<tr>
<td>Above 55</td>
<td>20.40</td>
<td>23.19</td>
</tr>
<tr>
<td>At all ages</td>
<td>23.50</td>
<td>13.93</td>
</tr>
</tbody>
</table>

### TABLE IV.

*Showing average number of deaths and rate of mortality from Phthisis in Victoria at different ages, for two periods of 5 years each.*

<table>
<thead>
<tr>
<th>AGES</th>
<th>DEATHS FROM PHTHISIS.</th>
<th>RATE PER 10,000.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AVERAGE 1859-63.</td>
<td>AVERAGE 1869-73.</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>33 1/2</td>
<td>3.67</td>
</tr>
<tr>
<td>5 to 10</td>
<td>7 1/2</td>
<td>1.48</td>
</tr>
<tr>
<td>10 to 15</td>
<td>11</td>
<td>3.18</td>
</tr>
<tr>
<td>15 to 20</td>
<td>36</td>
<td>10.87</td>
</tr>
<tr>
<td>20 to 25</td>
<td>87 1/2</td>
<td>15.60</td>
</tr>
<tr>
<td>25 to 35</td>
<td>274 1/2</td>
<td>18.26</td>
</tr>
<tr>
<td>Above 35</td>
<td>261 1/2</td>
<td>21.57</td>
</tr>
<tr>
<td>At all ages</td>
<td>712 1/2</td>
<td>13.18</td>
</tr>
</tbody>
</table>

### TABLE V.

*Showing number of persons living in Melbourne and Suburbs and in the rest of the Colony at different ages, in 1861 and 1871.*

<table>
<thead>
<tr>
<th>AGES</th>
<th>MELBOURNE AND SUBURBS.</th>
<th>REST OF VICTORIA.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1861.</td>
<td>1871.</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>24,243</td>
<td>30,204</td>
</tr>
<tr>
<td>5 to 10</td>
<td>15,592</td>
<td>27,849</td>
</tr>
<tr>
<td>10 to 15</td>
<td>11,370</td>
<td>24,060</td>
</tr>
<tr>
<td>15 to 20</td>
<td>10,345</td>
<td>17,650</td>
</tr>
<tr>
<td>20 to 25</td>
<td>13,350</td>
<td>17,476</td>
</tr>
<tr>
<td>25 to 35</td>
<td>32,688</td>
<td>33,098</td>
</tr>
<tr>
<td>Above 35</td>
<td>32,088</td>
<td>56,443</td>
</tr>
<tr>
<td>At all ages</td>
<td>139,916</td>
<td>206,780</td>
</tr>
</tbody>
</table>
TABLE VI.

Showing number of deaths from Phthisis in Melbourne and Suburbs and in the rest of the Colony, at different ages, in 1861 and 1871.

<table>
<thead>
<tr>
<th>AGES</th>
<th>Melbourne and Suburbs</th>
<th>Rest of Victoria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1861</td>
<td>1871</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>5 to 10 &quot;</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>10 &quot; , 15 &quot;</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>15 &quot; , 20 &quot;</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>20 &quot; , 25 &quot;</td>
<td>39</td>
<td>52</td>
</tr>
<tr>
<td>25 &quot; , 35 &quot;</td>
<td>130</td>
<td>138</td>
</tr>
<tr>
<td>Above 35 &quot;</td>
<td>122</td>
<td>228</td>
</tr>
<tr>
<td>At all ages</td>
<td>333</td>
<td>461</td>
</tr>
</tbody>
</table>

TABLE VII.

Showing mortality from Phthisis per 10,000 of population in Melbourne and Suburbs and in the rest of the Colony, at different ages, in 1861 and 1871.

<table>
<thead>
<tr>
<th>AGES</th>
<th>Melbourne and Suburbs</th>
<th>Rest of Victoria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1861</td>
<td>1871</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>5.77</td>
<td>3.97</td>
</tr>
<tr>
<td>5 to 10 &quot;</td>
<td>2.56</td>
<td>71</td>
</tr>
<tr>
<td>10 &quot; , 15 &quot;</td>
<td>7.91</td>
<td>2.49</td>
</tr>
<tr>
<td>15 &quot; , 20 &quot;</td>
<td>14.49</td>
<td>13.03</td>
</tr>
<tr>
<td>20 &quot; , 25 &quot;</td>
<td>28.69</td>
<td>29.18</td>
</tr>
<tr>
<td>25 &quot; , 35 &quot;</td>
<td>39.76</td>
<td>41.69</td>
</tr>
<tr>
<td>Above 35 &quot;</td>
<td>38.02</td>
<td>40.39</td>
</tr>
<tr>
<td>At all ages</td>
<td>25.79</td>
<td>22.29</td>
</tr>
</tbody>
</table>

It was resolved that the consideration of the report be postponed.

Dr. MARTIN then read the following communication, received from a leading pharmaceutical chemist—

**ON THE DIFFERENCE BETWEEN A MINIM AND A DROP:**

Oct. 24, 1877.

My Dear Sir,—I have thought it very possible the subject to which I wish to draw your attention may deserve notice by the Medical Society of Victoria, and if so, promote through their influence a clearer understanding by druggists in dispensing prescriptions. I allude to the practice of medical gentlemen very
frequently prescribing "Guttæ," whilst others invariably prescribe "Minims." It can hardly be said a "Drop" has any definite signification; but if "Drops" are really meant, I would respectfully suggest that a dash be marked below, implying that Drops and Drops only are intended. I have quoted a few of the most important medicines which differ largely between "Drops" and "Minims," thus:—

Tr. Opii. Gtt. xxx., only M xv.
Tr. Digitalis Gtt. 60, little more than M xxx.
Tr. Aconiti Gtt. 60, only M xxx.

Another subject to which I wish to draw your attention, as it is possible some medical men may not be acquainted with the fact, is, that Digitalis is now grown in the colony, and its effects are when Tincture or Powder are prepared from fresh leaves, at times very severe. Very recently a medical gentleman had suddenly to stop medicine in which Tinct. Digitalis was ordered, and which tincture I had made from the fresh leaves only gathered a few days, the tincture also being quite fresh.

Another medical gentleman practising in the country informed me that the Digitalis leaves he gathered in a neighbour's garden he administered in infusion in an affection of the heart, and the action of the medicine was most remarkable.

You may remember the somewhat serious controversy regarding the action of Digitalis which took place a few years back in Melbourne, and this decided action of the fresh leaves may perhaps account for the wide divergence of opinion then expressed by medical men.

One matter more. I have recently, by mere accident, ascertained that it is the practice of some very respectable monthly nurses to carry with them secretly, when engaged in their calling, a preparation known as "Godfrey's Cordial"—made with laudanum, treacle, Oil of Sassafras, and water. It was at one time the practice to purchase the preparation ready-made, but it is now made by themselves, and by doing this it avoids any suspicion. The object of giving this medicine is, that nurse can state to the mother, "Oh! such a dear good baby, so quiet, and sleeps so well." The hint I have thus given may be of use to the profession, and for this reason I have ventured to trouble you.

I am, dear Sir,
Yours faithfully,

DR. MARTIN.

Mr. GIRDLESTONE was glad the subject had been brought up. It was not that we did not know the difference between a minim and a drop, but that we forgot to indicate it. There would be no objection to our prescribing either minims or drops, only it should be understood that we meant one or the other to be used. Snow had said that three drops weighed one grain, but that one minim weighed a grain
and a half. In respect of tablespoons there was the widest possible difference. He saw by the home journals that graduated measure-cups were being sold for a penny. Here they were charged sixpence. We ought to encourage patients to use them.

Dr. Molloy exhibited an ingenious contrivance for dropping fluids.

Dr. Jamieson was of opinion that we ought never to order drops.

The next paper read was:

AN ATTEMPT TO EXPLAIN THE CURATIVE ACTION OF CERTAIN REMEDIES IN GENERAL USE.

By John Day, M.D.

Mr. President and Gentlemen,—

Although Medicine has not yet attained the rank of an exact science, we are, fortunately, often enabled to call to our aid chemistry and other exact sciences for the purpose of demonstrating the correctness of our views regarding the nature and treatment of disease; and I shall endeavour this evening, by a few simple and easily-repeated experiments, to show you that an approach, at least, towards a scientific explanation may be offered for the use of a rather large number of our most favourite remedies. I have selected for this purpose the following well-known therapeutical agents, viz.:—Cod-liver oil and other fixed oils and fats, oil of turpentine and other essential oils, common resin, the resin of guaiacum, myrrh, and ether. We have now before us a fair array of medicines in general use, and it will be my aim to show you that, although most of them differ widely in their general characteristics, they all possess one property in common, viz., the power of absorbing atmospheric oxygen and converting it into peroxide of hydrogen—a substance possessed of many curious and interesting properties, some of which are at present but little understood. It is composed of two atoms of hydrogen and two atoms of oxygen, hence its symbol is $H_2O_2$, and its combining weight 34. This compound is remarkable for the ease with which it parts with its second atom of oxygen, which is held in very loose combination; and also for the readiness with which, under certain conditions, it is resolvable into water and oxygen. Now, this decomposition may be effected in a variety of ways, but the rapidity with which it occurs when peroxide of hydrogen is brought into contact with the colouring matter of blood, with fibrin, or with pus, is a property which renders this substance highly interesting in a physiological point of view.

It is now generally believed that oxygen, as it exists in the blood, is in a more active state than ordinary atmospheric oxygen. Carpenter says:—"As regards the oxygen contained in the blood, there is every reason to believe that it is chemically combined with the haemoglobin of the red corpuscles in which it exists in the active or ozonised condition." Schönbein was the first to clearly show that oxygen is capable of existing in two different states of activity,
each state having its own special affinities; and he supposed that ordinary oxygen was a perfectly neutral gas, and incapable of producing any oxidations until it had been chemically polarised and split up into ozone and antozone. He considered that the oxygen absorbed during respiration was thus acted on by the colouring matter of the blood; and the views I am about to submit for your consideration are to some extent a modification of those entertained by him. Instead, however, of believing, as Schönbein did, that the first change which occurs in the inspired oxygen is produced by the colouring matter of the blood, I hold that the first change is produced by the fat, which exists in the blood in considerable quantities, more particularly in the corpuscles; and I assume that this fat, which is in a state of excessively fine subdivision, is incessantly engaged in acting on the inspired oxygen contained in the red corpuscles, and converting it into peroxide of hydrogen—a substance which is instantly transformed by the colouring matter of the blood into water and oxygen—a gas which at the moment of its liberation is possessed of many of the characteristics of ozone, and is known to chemists as nascent oxygen; and I am inclined to believe that it is oxygen in this state, although perhaps not always liberated from peroxide of hydrogen, which gives rise to all the different oxidations that occur within the animal body during life.

I will endeavour to demonstrate the correctness of this theory by a chemical experiment. Oxygen in a nascent state, like ozone, is capable of oxidising and turning blue the resin of guaiacum, but neither the oxygen contained in peroxide of hydrogen nor atmospheric oxygen is capable of effecting this change. Now, here is some human fat, which, like all animal fats that have been deprived of blood and freely exposed to the air, contains spontaneously generated peroxide of hydrogen. I will first place a little of it on a piece of white blotting-paper, and then pour over it some alcoholic solution of guaiacum,—a process which will not, you will find, be followed by any change of colour in the guaiacum, the oxygen of peroxide of hydrogen being incapable of oxidising and turning it blue; but, on the addition of a small quantity of the colouring matter of blood, you will perceive that a bright blue reaction will quickly ensue, thus showing that oxidation of the guaiacum has occurred. This result has been brought about by the colouring matter of the blood having transformed the peroxide of hydrogen contained in the fat into water and nascent oxygen. To make this illustration complete, I must now show you that the colouring matter of blood alone is incapable of oxidising and turning blue the resin of guaiacum.

In stating to you just now that all animal fats which have been deprived of blood and exposed to the air contain peroxide of hydrogen, I did not intend to imply that fats containing blood were incapable of generating peroxide of hydrogen, but simply that, so long as any of the colouring matter of blood remained within them, the peroxide of hydrogen would be decomposed as rapidly as it was generated.

I cannot, of course, show you that fat, as it exists in the living
body, is capable of converting the inspired oxygen into peroxide of hydrogen; nor can I show you that, during life, the fibrin and the colouring matter of the blood are capable of decomposing peroxide of hydrogen and resolving it into water and oxygen; but I can clearly show you that animal fats, out of the body, possess the property of generating peroxide of hydrogen, and of concentrating and storing it up, until they are brought into contact with blood, pus, or other substances which are capable of reducing it and liberating its oxygen.

I have already shown you that spontaneously generated peroxide of hydrogen exists in human fat, and I will now, by means of the same test, which is perfectly reliable, offer you proof of its existence in the fats of mutton and beef, in lard, butter, and cod-liver oil. You will find them all capable of oxidising guaiacum resin in the presence of blood. I will then proceed to show that the same principle exists in almond, olive, and linseed oils; in the essential oils of turpentine, juniper, lavender, peppermint, and caraway; in common resin, the resin of guaiacum, myrrh, and ether.

It has been stated by Professor Roscoe and other modern writers on chemistry that peroxide of hydrogen does not occur in nature, and I may here venture to state that I claim to have been the first to show the presence of this physiologically interesting principle, not only in fats and oils, but also in a very large number of substances, many of which rank among our most valuable remedial and prophylactic agents.

The importance of fat in the animal economy is now more clearly recognised than it formerly was. Dr. Sydney Ringer, in his well-known work of Therapeutics, says:—"Fats are necessary foods to the animal body, being both heat-giving, force-supplying, and plastic. Their combustion contributes mainly to the generation of the heat of the body."

Having demonstrated to you the fact that, apart from the conditions of life, all fats and fixed oils possess the property of absorbing atmospheric oxygen, and converting it into peroxide of hydrogen—a substance which, as I have said before, is resolved into water and nascent oxygen when brought into contact with the colouring matter of blood, I will now assume that fats in the living body obey the same chemical laws as they do out of the body, and that the oxygen which has been absorbed by the red corpuscles of the blood during respiration, is converted by the fat which is always present in the blood, although in varying proportions, into peroxide of hydrogen; and that the peroxide of hydrogen thus formed is resolved by the colouring matter of the blood into water and nascent oxygen.

I think it possible that the iron in the colouring matter of the blood may be the principle which decomposes the peroxide of hydrogen and liberates its oxygen, and I will show you an experiment which rather favours this view. The experiment I am about to perform will be almost a repetition of our first experiment, in which I showed you that the oxygen of peroxide of hydrogen, as
contained in human fat, could not, by itself, oxidise the resin of guaiacum; but that on the addition of a mere trace of a watery solution of the colouring matter of blood it did so readily. On this occasion the only difference I shall make will be to substitute a watery solution of perfectly pure protosulphate of iron for the solution of the colouring matter of blood, and we shall find that the guaiacum resin will be oxidised and turned blue, just as it was by the colouring matter of blood. Protosulphate of iron which has become, even in the slightest degree, oxidised, is unfit for this experiment, as it would then contain ozonic oxygen, and would oxidise guaiacum resin and turn it blue without the intervention of peroxide of hydrogen.

When this peculiar, but at present barely recognised property of fats and fixed oils becomes more generally known, it may lead to a modification of our present views regarding the functions of fat in the animal economy; and also, perhaps, to a clearer knowledge of the therapeutic influence of fats and oils. Cod-liver oil, by common consent, takes the highest place as a remedial agent among the fats. The ease with which it is digested may, perhaps, be its chief recommendation, for we often find that those who have derived the greatest benefit from its use have been unable to digest other fats. Its therapeutic value is universally recognised in the treatment of phthisis, scrofula, and other diseases in which the functions of oxidation and nutrition are imperfectly performed; and I am disposed to attribute some of its curative properties to the power it possesses of readily carrying peroxide of hydrogen into the circulation, and of thus, by supplying nascent oxygen to the blood, promoting the oxidation and removal of effete tissue, and possibly also of strumous and tubercular matter.

To this property of spontaneously generating peroxide of hydrogen, coupled with a power of readily entering the blood when administered internally, may, I think, be ascribed the beneficial action of many other therapeutic agents, some of which experience has shown to be of value in the treatment of diabetes, gravel, rheumatism, and gout, all of which rank among the diseases of sub-oxidation.

Many years ago the use of what was called ozonised cod-liver oil was highly recommended by Dr. Symes Thompson and his father. In twenty cases in which it was administered by the latter gentleman the pulse was reduced more than twenty beats in a minute in eleven, and to a less extent in seven of the remainder. Now, this so-called ozonised oil was nothing more than cod-liver oil which had become highly charged with peroxide of hydrogen in consequence of long exposure to the direct rays of the sun. I may observe that the combined influence of warmth and light greatly expedites the formation of peroxide of hydrogen.

During the last few years Dr. Balthazar Foster, of Birmingham, has strongly advocated the use of etherised cod-liver oil in the treatment of phthisis. Now, here again we have cod-liver oil containing a larger proportion of peroxide of hydrogen than it ordinarily contains.
and this is due to its admixture with ether, a substance which possesses a much higher power of generating peroxide of hydrogen than is possessed by oils.

Myrrh is a substance which, in common with the majority of hydrocarbons and oxyhydrocarbons, possesses the property of absorbing atmospheric oxygen and converting it into peroxide of hydrogen; and this property, coupled with the decomposition and liberation of nascent oxygen, which takes place when peroxide of hydrogen is brought into contact with either blood or pus, affords, I think, a tolerably rational explanation of the beneficial action of tincture of myrrh in the treatment of bleeding and spongy gums, and of certain forms of sore throat. It is worthy of remark that pus liberates the oxygen from peroxide of hydrogen much more rapidly than it is liberated by blood. The purifying and stimulating action of common resin, when applied to bleeding or suppurating surfaces, admits of a similar explanation.

Guaiacum resin, once a famous remedy for chronic rheumatism, is still recommended by Dr. Garrod and some other practitioners of eminence in the treatment of this disease. It is, however, rather uncertain in its action, and this may possibly be due to the fact that whilst some specimens of the resin will generate peroxide of hydrogen pretty readily, other specimens seem quite incapable of generating it, even under the most favourable circumstances for its production. I need hardly say that, for experimental purposes, the alcoholic solution of guaiacum should always be freshly prepared from pure and unoxidised resin.

Oil of turpentine is the last remedial agent to which I shall refer. It possesses in a higher degree the power of generating peroxide of hydrogen than any other substance with which I am acquainted, and this property may account, in some measure, for its great value in the treatment of typhoid fever, and other diseases in which free oxygenation of the blood would seem to be desirable.

In conclusion, gentlemen, I would wish it to be clearly understood that I do not for a moment entertain the absurd idea that the property of imparting active oxygen to the blood is the sole virtue possessed by any of the substances I have brought under your notice; but, at the same time, I cannot help thinking that those substances which, from a chemical point of view, may be supposed capable of aiding Nature in oxidising and carrying off the effete materials of the body are deserving of a high rank among our remedial agents.

Nomination of Office-Bearers for 1878.

A conversation ensued in connection with this subject. Mr. Ford thought the meeting should have been supplied with some sort of information, as a guide in making these nominations, and he proposed that the meeting be adjourned for this purpose. The motion was lost and the nomination proceeded. The Honorary Secretary, however, promised that next year such information as might be necessary should be supplied and convenient forms furnished.
SPECIAL MEETING.

WEDNESDAY, DECEMBER 19.

(17 Collins Street East.)

Present: Mr. Gillbee, Dr. Martin, Dr. Neild, Dr. Jamieson, Dr. Williams, Dr. Hunter, Dr. M. Smith, Dr. Bird, Dr. Jonasson, Mr. Girdlestone, Dr. Cutts, Dr. Ryan, Dr. Singleton.

The President (Dr. McMillan) in the chair.

ADJOURNED DISCUSSION UPON THE PHTHISIS REPORT.

Dr. Neild proposed, and Mr. Gillbee seconded, the adoption of the report.

Dr. Williams had understood that the Committee was appointed to consider the whole question of Phthisis in Victoria, and this report embraced only a small part of the subject, namely, the statistical aspect, which the Committee had arranged to take first. The question was, was it desired that the Committee should resume their investigations, more especially those relating to the adaptability of this climate for the treatment of consumption? It could not, he thought, be doubted that consumptive persons in the early stage of the disease who came to this colony, were benefited. He suggested, therefore, that the Committee might go on collecting data bearing upon the suitability of this climate for treatment of consumption. Dr. Singleton's investigations too, with reference to altitude as an influence, might be extended.

Dr. Martin did not think there should be any limitation to the labours of the Committee, who should be confirmed in their authority to pursue the subject.

Dr. Bird hardly thought Dr. Williams was quite aware of what had been done in this direction of investigation. The truth was the question had been settled twelve years ago. He was more and more satisfied of the truth of the opinions he had long ago propounded, that phthisical persons who came to this colony had a better chance of living than if they staid at home. His own was a good case in point. Sixteen years ago he came to Victoria with softened tubercle in both lungs. Dr. Patrick Smith also came twelve years ago with a cavity in the left lung. Both of them had long ago ceased to suffer from any symptom of phthisis whatever. And there were many such cases. He had suggested to directors of Life Insurance Companies to encourage such investigations, but they had declined to take the matter up.

Dr. Martin said the point to be assured upon was what was the stage of phthisis at which a patient might safely come to this colony.
It was certain that every case was not suitable for removal hither. Phthisical patients did not necessarily recover by coming here, for a good many who came did not recover, especially if they came in summer. We should guard against letting it be understood that this climate was necessarily beneficial to phthisical patients. The hot winds were certain to aggravate the malady. Those in England ought to be made aware as to how far a man might be advanced in phthisis and yet be susceptible of benefit.

Dr. Jonasson thought it need hardly be said that patients coming here in the last stage of phthisis would die, of course. But with those in the commencing stage, the question was whether they should remain in England and endure unmitigated suffering, or come here and enjoy comparative health. Phthisical patients at home were obliged to live within doors, while here they could go out with impunity. He did not speak of those in the last stage, but of those who were simply tuberculous. He insisted that to patients of this kind, life in Europe was simply unendurable. In explanation of the high death-rate mentioned in the report, it was to be remembered that there had been a large influx of consumptive persons from Europe. In his young time, every phthisical patient who could, went to Madeira, and one writer very naturally said that, judging by figures, Madeira was the most unhealthy climate in the world. The same mode of estimation appeared to have been adopted by some interested and therefore altogether ex parte judges here when speaking of Victoria.

Dr. Hunter said: The subject of phthisis and climate is one of very personal interest to me, as I came to Australia to escape a Scottish winter, after a severe attack of hæmoptysis. I have therefore gone a little into the matter, and the following facts may be of interest to the Society, more especially as Victoria has proved, when fairly scrutinised, to hold a first rank for chest complaints. To illustrate the matter called in question, namely, that phthisis is affected by climate, the States of America I thought should furnish valuable information. Of the forty and odd states and territories, many must be similar in population, density, resources of life, and everything but climate. Professor Andrews, of Chicago, some time ago classified the census figures of 1861 and 1871, and stated the law of the distribution of phthisis as follows:—It is abundant near the sea, and diminishes as you recede from it; and, secondly, at equal distances from the sea it prevails most at the north and diminishes as you go south. Dryness of the atmosphere is obviously perhaps the most important climatic condition for phthisical patients, and amongst prosperous and improving countries Australia cannot be matched for that quality. The comparatively low density of our population has been made much of, and as America offers parallel cases, I quote the phthisis death-rates for all the states and territories most nearly approaching Victoria in density. For comparison outside of the states, the census figures have been corrected, as suggested.
in the official rates to the census report. Phthisis death-rate for
10,000 of population—

Maine ... 47.7
Louisiana ... 29.1
West Virginia ... 24.1
Wisconsin ... 19.8
Minnesota ... 15.6
Arkansas ... 13.3
Mississippi ... 12.6

The first two with phthisis rates averaging nearly 40 per 10,000 are
seaboard states; the others are inland states, Mississippi having
only a very small corner touching the sea; and the last two, with a
rate of about 13, are the furthest south and the warmest of the
seven. Evidently climate has much to do with phthisis, more by
far than such density of population as even London supplies. Dry-
ness of the soil and atmosphere is the first point, warmth the
second. Even Greenland, with its cold but dry atmosphere, is
superior to any moist climate, be it warm or cold. For a dry and
warm climate no place offers such advantages as the inland plains
of Australia, for where else will you find English tongues, English
industry, and, to an equal extent, English comforts in any similar
climate. Queensland has a name for such advantages, but it seems
to me one can have too much heat, and I would prefer the equally
dry whilst much cooler plains of Victoria. Town life shares the same
climatic law as country life, and both at home and in America the coast
cities show the heavier phthisis death rates. In America, New York,
Boston, and New Orleans, with a phthisis death-rate in 1873 above
40, are all seaports, whereas Chicago and Buffalo, two inland cities,
have a rate under 16. Melbourne, of the six metropolitan cities of
Australia, is most inland, and should prove the best for phthisis
patients. Its phthisis death-rate is high, but that of Brisbane
equals it; and as these two cities are, the one the hottest and the
other the coolest of the mainland capitals, it is evident that to
their popularity with phthisis invalids, and not their climates, is
due their position at the head of the list. Melbourne, as the London
of Australia, gets nearly all the Australian-sent invalids, whilst
Brisbane, in Queensland, has a name of its own. Comparing the
various Australasian cities for 1871-2 (census and following years)
we find their position as follows, arranging them according to the
lowness of their general death-rate during the last five years:

<table>
<thead>
<tr>
<th>General death-rate</th>
<th>Phthisis 1871-2</th>
<th>Respiratory diseases, 1871-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne and Suburbs</td>
<td>20.59</td>
<td>20.5</td>
</tr>
<tr>
<td>Brisbane</td>
<td>20.90</td>
<td>20.6</td>
</tr>
<tr>
<td>Sydney</td>
<td>21.08</td>
<td>19.0</td>
</tr>
<tr>
<td>* Seven New Zealand Boroughs</td>
<td>22.83</td>
<td>19.6</td>
</tr>
<tr>
<td>Hobart Town and Suburbs</td>
<td>23.45</td>
<td>17.2</td>
</tr>
<tr>
<td>Adelaide</td>
<td>24.70</td>
<td></td>
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</table>

* For 1874-5, the only years obtainable.
For Adelaide I could get no particulars, but the general death-rate is so much above that of Melbourne, that it must be reckoned inferior for the invalid. No city comes near Melbourne in its immunity from diseases of the respiratory class. Unfortunately, none of these cities are properly drained. The first to accomplish that may prove itself a city of hygiea indeed. As regards the hot winds, as long as they blow for one day only—and that is the rule—I cannot say I dislike them. Indeed, I rather enjoyed them; and to judge from the health of the patients who came out in the ship with me, and most of whom I kept up communication with, the only death from lung disease that has yet occurred happened in June last—the coldest, and not the hottest month.

Dr. Singleton was disappointed there had been no return from New South Wales, or South Australia, and he thought that the medical men of those colonies should be communicated with, desiring them to urge their respective Governments to furnish statistical information on the subject. Moisture was an important factor in determining the extent and character of phthisis. Here there was comparatively little swampy ground, so that although we had much brain-disease, we had very little disease of the chest. The recorded death-rate in Melbourne, as compared with the country districts, admitted of a very obvious explanation, of a social and hygienic nature.

Dr. McMillan thought the next stage in the investigation would be to ascertain the point at which phthisical patients might be sent to Victoria. It was important too to ascertain the kind of occupation suitable for those who came here suffering from phthisis.

Dr. Cutts hardly discovered the necessity for the Committee to resume their labours. They had taken up and analysed certain statistics on the subject of phthisis, but there were no further statistics to be taken up, and anything else was only a matter of opinion and individual experience. All that could be done therefore would be to ask members to record their experience. The value of the report consisted in the validity of the figures, and some of these were very valuable, especially those in tables 2, 5, and 6, showing the number of fatal cases of phthisis in proportion to the number of persons living at that time of certain ages. Others were hardly so valuable, for instance, in any 10,000 persons in the colony there must be a considerable difference, on account of the number of children.

Mr. Gillbee did not think there were data sufficient to warrant the Committee going on with their investigations, and this Society would have to be careful in giving its assent to any suggestion which might be recommended by a committee. The Society could vouch for the correctness of statistics, but it was different with opinions which would represent the collective voice of the Society. He bowed to Dr. Bird as a potent authority upon the subject of phthisis, but he yet thought the changes of temperature in Victoria were very trying to phthisical patients. He could quite understand
that Dr. Bird, having experienced so much benefit himself by the
change, desired that others should benefit also. He could not shut
his eyes to the reports published every month in the Argus of the
large number of persons dying of phthisis in the Melbourne
Hospital. Phthisical patients came to Victoria because, in phthisis,
there was always great hopefulness. No doubt, comparing Victoria
with England, Victoria had the advantage in respect of climate;
bnt it would not do to strongly recommend the climate on the
strength of any array of individually-collected facts.

Dr. Singleton thought the great immunity of the native-born
population was very encouraging.

Dr. Bird mentioned that Dr. Hall, of Hobart Town, had published
a valuable report upon this part of the subject.

Dr. Jonasson did not think that Dr. Bird had ever advised that
cases of advanced phthisis should be sent out.

Dr. Williams saw no reason to discontinue further investigation,
because, twelve years ago, Dr. Bird had written a book on the
subject of Phthisis in Victoria. Surely, in the time that had since
elapsed, there had accumulated materials the collection of which
would be of value.

Mr. Girdlestone thought if the Special Committee desired to go
on in their investigations they should have the authority to do so.

Dr. Cutts suggested that an evening might be set apart, when
each member might give his experience. Other than this, it would
be hardly expedient to attempt.

Dr. Martin was strongly of opinion that a somewhat mistaken
opinion prevailed at home, and that the advantages of the colony as
a residence for phthisical patients had been exaggerated. Without
in any way wishing to disparage the colony, he desired that a true
account should be sent home.

Dr. Bird promised that he would at an early day read a paper
detailing his experience, which had been somewhat large, upon the
benefits which had actually been found by phthisical patients
removing to this colony. Hardly a ship arrived which did not bring
one or more persons seeking health in this way.

Dr. Jamieson, speaking of the report, said that the Committee,
after carefully considering the matter, had concluded that the
statistical was the only ground-work upon which they could satisfac-
torily base a report. This he thought had been incontrovertibly
demonstrated:—1. That there was less phthisis in this colony than in
England; 2. That its prevalence was lessening. He agreed that
anything further than the Committee had attempted would be but
matter of opinion. We could only show that a considerable number
of phthisical patients both did and would recover. He would be glad
to get from Dr. Bird the number of young adults who died soon
after arrival from 1861 to 1871. He would also be glad to know if
in 1871 there was more phthisis in the colony than in 1876. He
could not get this information from Mr. Hayter.
A conversation took place upon the desirability of distributing the report to the journals, and the Honorary Secretary was eventually instructed to forward it to the principal newspapers in the colonies, and to the medical journals of the United Kingdom.

![Image]

**Australian Medical Journal.**

**NOVEMBER, 1877.**

**SHIP SURGEONS.**

There was a time when the surgeon of nearly every ship arriving from the old country in Victoria did not go back when that ship returned. In those times very few people went from here to England, so that the absence of a surgeon on board did not very much matter, save to the sailors, and for them the captain generally felt equal to prescribe. Now-a-days it is different. Most ship surgeons go back with the ship, for it has come to be the rule to pay them, and therefore the appointment is looked upon as worth retaining. Now and then, however, the surgeon of an incoming vessel does not return with her, and then it becomes necessary to provide one. But the ship owner’s mind still inclines in the direction of economy, and as medical men are occasionally visiting England, they give their services in lieu of passage money. But sometimes it happens that no medical man is going home, and those who are available for the appointment of surgeon, but who have not otherwise any inclination to go to England, very naturally desire to be paid for their services. In such case, then, the ship owner or agent seeks to comply with the provisions of the act by obtaining some unqualified man, who will go for nothing, and in this search he is generally successful. We have heard of chemists’ assistants being so appointed, and University second year students. It is difficult to say how the Immigration Agent is satisfied, but as such appointments are undoubtedly made, it is to be presumed that he is satisfied, and the passengers take their passage in the full belief that the ship carries a “qualified surgeon.” It is equally unfair to the profession here, for although the colony is not overstocked with medical men, it would always be possible to procure a medical man by offering adequate remuneration. The moral effect, however, is worse than the actual loss to the profession, for if such appointments are sanctioned and become the rule, it is easy to see how the general value of medical services is lowered. It is, however, only another instance of the improper estimate
formed of medical skill, the principal explanation of which, no doubt, lies in the cheap rate at which medical men appraise themselves. It was long the rule for ship owners to give nothing but the equivalent of a free passage to their surgeons, and as they never found any difficulty in procuring them at this rate, it is not surprising that they always expected to get them. But this selection of wholly unqualified persons for such important duties presents a somewhat new aspect of the question, and it would be well if the specific facts which constitute the irregularity were laid before the proper authorities.

The University of Melbourne.

The following degrees were conferred at a meeting of the Council on December 2nd:

Bachelors of Medicine.

Regulations for Degrees in Surgery.
The following proposed statutes for degrees in surgery were rejected at a meeting of the Senate held on December 4th:

Degree of Bachelor of Surgery.
1. Candidates for the degree of Bachelor of Surgery must—1. Have passed the final examination for the degree of Bachelor of Medicine in the University of Melbourne, or in some other University recognised by it. 2. Have attended for two years the surgical practice of a hospital or hospitals recognised by the University of Melbourne. 3. Have passed the examination hereinafter mentioned for the degree of Bachelor of Surgery.

2. The subjects of examination for the degree of Bachelor of Surgery shall be—1. Surgical anatomy by printed papers. 2. Surgical pathology by printed papers. 3. Application of surgical apparatus. 4. Viva voce interrogations on the above subjects.

3. Candidates who shall have complied with these regulations and shall have passed in all the subjects of this examination may be admitted to the degree of Bachelor of Surgery.

4. Candidates for the degree of Bachelor of Surgery who have graduated as Bachelors of Medicine prior to the 1st of May, 1876, upon producing evidence of having attended two years' surgical practice in a recognised hospital or hospitals, may, without further examination, be admitted to the degree of Bachelor of Surgery.

Degree of Master of Surgery.
1. Candidates for the degree of Master of Surgery must be Bachelors of Surgery of at least two years' standing in the
University of Melbourne, or in some other University recognised by it.

2. Bachelors of Surgery, candidates for the degree of Master of Surgery, must produce satisfactory evidence that subsequently to having taken the degree of Bachelor of Surgery they—1. Have filled the offices of house surgeon or dresser in a hospital for not less than six months. 2. Have attended during two years the surgical practice of a hospital; or, 3. Have attended during one year the surgical practice of a hospital and have been engaged for three years in surgical practice; or, 4. Have been engaged for five years in surgical practice.

3. Candidates may then be admitted to examination for the degree of Master of Surgery.

4. The subjects of the examination shall be: Logic (if not passed previously), surgery, surgical anatomy with demonstrations on the dead subject, surgical pathology, surgical operations on the dead subject, the practical use of surgical apparatus.

5. Candidates will also be required to write commentaries on cases in surgery, and to write reports on such surgical cases in a hospital as the examiner may direct, and to answer oral interrogations on their commentaries and on their reports of surgical cases on surgical anatomy, surgical pathology, surgical operations, and the practical use of surgical apparatus.

6. The reports on surgical cases shall be written immediately after the inspection of the patients, and shall give in detail the history, symptoms, diagnosis, treatment and prognosis in each case.

7. Candidates who shall have passed in all the subjects of this examination, and complied with these regulations, may be admitted to the degree of Master of Surgery.

MELBOURNE HOSPITAL CHRONICLES.

December 4.—Committee Meeting: The report of the sub-committee appointed to investigate certain charges preferred against Messrs. Girdlestone and Webb, with reference to operating upon a dead body, was fixed to be brought up at the next weekly meeting.

VITAL STATISTICS OF THE POLICE FORCE OF VICTORIA, FROM THE 1ST JANUARY, 1876, TO THE 31ST DECEMBER, 1877, INCLUSIVE.

Medical Officer to the Police Force of Victoria.

Table No. 1 shows the average number of men in the force during the past two years, the number dismissed, removed and superannuated, the number of deaths for the whole force, and the number of new men taken on.
As compared with the previous two years, it will be found that the total numbers nearly assimilate; but the proportion of deaths last year for the whole force was remarkably small, and speaks well for the quality of the recruits.

Table No. 2 records the number of cases treated in Hospital, the nature of the diseases, and results. From that it will be found that as usual catarrh, rheumatism and dyspepsia, exceed by a long way other ailments. Then comes general debility. These are in a great measure cases that have been treated in country districts, and that come into the Police Hospital as soon as they are able to be removed. Dysentery and diarrhoea, that used to be so common years ago, are now comparatively rare.

The number of cases treated in hospital is 65 less than the previous two years. The average duration of each case has been nearly thirteen days, the same as the previous two years. Only one death took place in hospital during that time, and only one during the previous two years—a very small death-rate indeed, especially when it is considered that few trivial cases come into hospital. Few men come into hospital unless they are really too ill to do duty; there are no out-patients, and all chronic cases are sent in from the country districts.

As usual, there have been a good many cases of phthisis. If there is even a latent trace of this disease in a man, it is sure to be developed by the duties and exposure incidental to a constable's occupation.

These statistics are complete from the year 1856 to 1877, inclusive, and have all appeared in this journal. The first that appeared was in the July No. of 1866, and was for the previous ten years.

The cause of death of the one case in May, 1876, was phlegmonous erysipelas and pyæmia, following an injury to the scrotum.

Police Department,
Chief Commissioner's Office,
Melbourne, 1st March, 1878.

Sir,—I have the honour to transmit to you herewith, a return of the Vital Statistics of the Police Force of Victoria, for the year 1876-7.

The same form as that used for previous years has been preserved, but I have thought it right to add three columns, showing the numbers of cases of superannuation, distinguishing those on the ground of ill-health, as materially affecting the information given in the other columns.

I have the honour to be, Sir,
Your most obedient servant,

F. C. STANDISH,
Chief Commissioner of Police.

Medical Officer to the Police Force, &c. &c.
Collins-street east.
TABLE No. 1.

Vital Statistics of the Police Force of Victoria, from 1st January, 1876, to the 31st December, 1877.

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Numbers* of Police</th>
<th>Superannuated</th>
<th>Remarks</th>
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<tbody>
<tr>
<td></td>
<td>Total Officers and Men.</td>
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<td>1099</td>
<td>25</td>
<td>1074</td>
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* The average is not between the maximum and minimum numbers, which would be deceptively affected by a short excessive variation, but between the actual numbers at the beginning and end of each period.

† Under Sec. 25 men retire when 60 years old and 20 years service.

‡ Six cases in 1876, and one in 1877, were of sudden death from falls, &c.
Table showing the number of Men treated in the Police Hospital, from the City and Suburbs of Melbourne, including some from Country Districts, from the 1st January, 1876, to the 31st December, 1877. The diseases, number of days in Hospital, etc.

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TOTALS: 34,150

1877 | 383 |
LOCAL TOPICS.

The following gentlemen registered their qualifications at the meeting of the Medical Board of Victoria, on the 7th December: John Henry Browning, Fitzoy, M.B. Melb. 1877; Frederick William Dobson McGachen, Ship Northumberland, L.S.A. Lond. 1877; Charles Henry Scott, North Brighton, M.B. Melb. 1877; Richard Sides, Melbourne Hospital, M.B. Melb. 1877; Robert Andrew Stirling, Richmond, M.B. Melb. 1877; Charles Erskine Dyer, Geelong, L. et L.M.R.C.P. et S. Ed. 1876.

On December 18th the following testimonial was presented to Dr. E. B. Heffernan, late senior Resident Medical Officer of the Melbourne Hospital, by the patients, on the occasion of his entering into private practice. "To Dr. E. B. Heffernan, Senior Resident Physician, Melbourne Hospital:—We, the undersigned patients of the Melbourne Hospital, having heard with great regret that you have resigned your position as Resident Physician to this institution, wish to express our sincere thanks for the unvarying kindness and attention which you have always shown us, and trust that your well-known professional abilities will meet with due recognition in your new sphere of action.

The following advertisement was extensively circulated during the month of December:

DR. RICHARDSON,
QUEENSLIFF.

Can
REMOVE the PORT-WINE MARK
Without pain,
And without leaving a scar.

BIRTH.

DEAN.—On the 5th inst., at St. Kilda, the wife of Henry Dacre Dean, M.R.C.S. Eng., East Carlton, of a daughter.

MARRIAGE.


NOTICES TO CORRESPONDENTS.

Communications have been received from Dr. Hunter, Dr. Jamieson, Dr. Rees, Mr. Girdlestone, Dr. Day, Mr. F. T. West Ford, The Registrar of the Royal College of Physicians of London, The Librarian of the British Museum.

The following publications have been received: The Lancet for Sept. 22, 29, Oct. 6, 13; The British Medical Journal for Sept. 22, 29, Oct. 6, 13, 27; The Medical Press and Circular for Sept. 26, Oct. 3, 10, 17; The Students' Journal for Sept. 29, Oct. 13; The London Medical Record for October; The Glasgow Medical Journal for October; The Anglo-Indian Commercial Advertiser for Sept. 30; The Canada Medical and Surgical Journal for October; The New York Medical Record for October 6, 13, 20; The American Journal of Insanity for October; The American Journal of the Medical Sciences for October; New York Medical Journal for October; The Pacific Medical and Surgical Journal for October; Analysis of the Record of Yellow Fever in New Orleans in 1876, by Joseph Holt, M.D.