BRIEF EXCERPTS

From Professor Carl von Naegeli's recent Work on the Minutest Fungaceous Organisms in Relation to Infectious Diseases and Sustenance of Health.

By Baron Ferd. von Mueller, C.M.G., M. & Ph. D., F.R.S.

A renowned observer of the simplest microscopic organisms, Professor Carl von Naegeli, of Munich, has recently placed his views on the germ-theory of miasmatic and contagious diseases on record, in a special volume of considerable extent. (Die niederer Pilze in ihren Beziehungen zu den Infektions Krankheiten und der Gesundheitspflege. München: gr. octav. 285.) In these times, when medical science is so particularly striving to elucidate the, (in many respects) yet obscure original causes of epidemics, a new and extensive contribution to this branch of pathologic literature from a masterly investigator will be hailed also by the English reader with pleasure; and even in those few cases, where the dicta of Dr. Naegeli may perhaps not be quite in consonance with more generally received opinions, the enunciation of his particular views ought to be met with respect, and ought to lead on to further independent researches. It is the intention in these pages to give a brief résumé of Professor Naegeli's work, especially as it does not seem, that it has hitherto received any attention in medical journals written in the English language. Those, who are specially interested in the subjects latterly treated by Naegeli, will easily find means of studying his work independently for themselves, for which very likely an English translation of so important a work will offer early facilities; they will find it a fountain of original researches, which was commenced to be opened up fully 40 years ago, and which has gradually become a powerful stream, adding (if we may speak...
allegorically) its limpid waters also to the immeasurable ocean of science and truth.

The illustrious author, at the outset, observes that all his results were obtained by the strictly inductive method of modern experimental physiology and chemistry, and that he was never led by mere theoretic considerations in any of his assertions. He regards the investigation of the nature of the infectious diseases (the expression is adopted in Naegeli's sense) as simply within the dominion of physiology, as they arise from the conflict between the vital power of the minutest fungaceous beings and that of the human organism. The physiologic treatment of this question steps to some extent in the way of those pathologists, who attribute to each particular infectious disease an originating peculiar fungus, while it must shake the doubts of those, who regard fungaceous developments in these diseases as merely collateral or sequential. Dr. Naegeli has laid great stress in his work on the promotion of well directed hygienic State measures, regarding many of the present methods as an enormous waste, or even contrary to the very objects to be attained; he contends, that an exaggerated and prejudicial importance has been attached to the impurities of the soil, while the more dangerous contamination of air became often comparatively disregarded. Dr. Naegeli commences by prefixing to his work a summary of data hitherto well established by him, to which he subsequently and seriatim refers for further elaboration in his volumes. These prefatory remarks are so concise and so explanatory of his views as to be here seriatim adhered to; but additional notes, condensed from the main text, enlarge on the views and results, to the enunciation of which the book is devoted. Although many of the notes on the physiology of the fungi seem at first sight irrelevant to the object of medicine, I have deemed it best to recapitulate these observations, as they have an important bearing on the pathologic processes generated by fungus-development in diseases of the human frame.

I.—The Lower Fungi and the Decompositions effected by them.

The principal lower fungi may be divided, for medical considerations, into three natural groups:—

a. The mould-fungi or mucedines, consisting of delicate threads, often ramified, either articulated or not jointed, at first white or pale, afterwards yellow, red, greenish, brown or black, through the appearance of innumerable minute spores.

b. The saccharomycetes, consisting of cells (of often only about \( \frac{1}{1100} \) millimetre diameter), sometimes isolated, sometimes arranged into the form of rosaries or sometimes connected by branches. They are multiplied by sprouting from the surface. The yeast-fungus belongs to this series.
c. The *schizomycetes*, consisting of cells, not seldom reduced to \( \frac{1}{1500} \) millimetre diameter, either single or grouped into stavelets (bacteria) or threads, seldom into tablets or cubes. They may be recognised under the microscope by their uniform size, their voluntary motion and their propagation, which is effected by sub-division of the cells. *Vibrio*, *Micrococcus*, *Spirillum* pertain to this series. So minute are some of these simplest of organic forms, that 30,000 millions are required to weigh a miligram!

It is here not the place to discuss how far the miasma- and contagium-organisms, acknowledged by Naegeli as *schizomycetes*, are allied to algae and even infusoria. Modern systems place these, the minutest and simplest of all organic beings, according to morphologic laws, so far as *schizomycetes* and *saccharomycetes* are concerned, into that section of *protophyta* which is devoid of chlorophyll.

The decompositions effected by the mould fungi may be decay or consumption. Under their influence for instance fruits putrefy, or wood is converted into mould by a kind of slow combustion, or organic substances are consumed by them and disappear.

The decompositions to which the sprouting fungi or *saccharomycetes* give rise, are those of fermentation. By their agency for instance sugar is converted into alcohol and carbonic acid.

The decompositions of the cleaving fungi or *schizomycetes* come within mucous and acetic fermentation and also ammoniacal putrefaction. The chemical products are amongst others carbonic acid, ammonia and offensively smelling gases. Under peculiar conditions they also convert sugar into lactic acid or into mucilage, or produce butyric acid, mannit, gum. Milk, under their influence, sometimes becomes bitter instead of acid, and blood-red pigments make their appearance on victuals containing starch. Lactic acid becomes finally converted into butyric acid.

Besides, *saccharomycetes* secrete soluble ferments, which have the property of converting cane-sugar into fruit or grape-sugar; while *schizomycetes* change some hydrates of carbon into fermentable sugar, and dissolve coagulated albumen or albuminates.

The above three groups of fungi are not convertible into each other, and therefore do not represent in any case different stages of growth of the same specific form. Different species of *schizomycetes* can assume one special kind of function of decomposition. Again, several products of putrefaction may arise from one species or form of these organisms. Each species of *schizomycetes* is able to produce several different morphologic and physiologic forms, which, according to external influences, may pass quickly or slowly into each other, whereby the power for one condition may be lost, and that for another be acquired.
II.—The Conditions of Life of the Lower Fungi.


2. Retrogression of Life. Involution. Characterised by the slow waste of substance. In the first period of involution it is possible to again stimulate the life and growth of the cells; in the second period this dies slowly but unavoidably.

3. The Formation of Quiescent Spores. Analogous to propagation by seed of the higher plants.

4. Latent Life. It may be induced by desiccation, freezing or other modes, but remains capable under favourable circumstances to resume active vitality.

5. Fermentation. It is the faculty of the saccharomycetes and schizomycetes to decompose: the former—sugar into alcohol and carbonic acid; the latter—sugar into lactic acid; glycerine into butyl-alcohol, butyric acid, etc.; urea into ammonia and carbonic acid, albumen into leucin, tyrosin, volatile fat-acids, amins, ammonia, sulphide of hydrogen, carbonic acid.

Each of the above stages of growth requires particular conditions. For instance, the state of fermentation may be retarded and interrupted by certain unfavourable conditions, which, becoming intensified, will first affect the evolution of the cells, and at last induce involution, and finally the death of the organism. The six agencies on which fungus life depends may be summed up as:

1. The nutritive substances necessary for the growth and increase of the lowest fungi; they consist: first, of certain mineral salts containing sulphur, phosphorus, potassium and magnesium; secondly, of organic compounds, containing in a higher degree carbon and nitrogen, or again ammonia combined with carbon-compounds without nitrogen. Among the best nutritive substances are sugar, many organic acids, alcohol, also those albuminates which are best able to diffuse through membranes.

2. Free Oxygen. It is indispensable only to the growth of the mould fungi; while the other two groups may under otherwise favourable conditions vegetate without it.

3. Water is necessary to the active growth of the fungi. In an air-dried state their life becomes suspended; if only partially dried they often form spores. Some minute schizomycetes are capable to re-vegetate, after having rested for centuries in a dry condition. Fungi in contact with sufficient water, but with insufficient nutriment, gradually perish.

4. Not nutritive substances soluble in water. They are all more or less injurious to the active life of the fungi; even nutritive substances, when too concentrated, prevent active fungus-life.

5. Temperature. Each kind and each modification of a fungus has a particular temperature, at which it flourishes best, and
beyond which in a moist state its growth is at first checked, and
its life afterwards destroyed. Low temperatures at or below the
freezing point of water, only induce the quiescent state of life.
The temperature of the human body is for the schizomyces one
of the most favourable.

6. Competition of different fungi. Within the same nutritive
fluid saccharomyces and schizomyces particularly will struggle
with each other for existence; thus those fungi, which find the
conditions for their growth the most favourable, will vegetate in
predominance or to the exclusion of other forms; but when one
species exists in vast majority at starting, it may suppress others,
though the constitution of the fluid may otherwise be more
congenial to the latter. For instance, a neutral saccharine
solution, to which the three classes of minute fungi obtain access,
will only produce lactic acid; if mixed with one-half per cent,
tartaric acid, alcoholic fermentation will commence, but if four or
five per cent. tartaric acid be added only mould-fungi will grow.
But the same solution containing even one-and-a-half per cent.
acid, and brought in contact with schizomyces, will be converted
into lactic acid, though perhaps a few germs of saccharomyces
did also get access. The former prefer a neutral solution or one
poor in salts, whereas the latter like to vegetate in a slightly acid
liquid and endure a greater quantity of salts.

III.—Anti-hygienic Effect of the Lower Fungi.

Dr. Naegeli, like so many others, is as yet undecided whether
fungaceous organisms can be regarded as originators of human
disease; but he arrives at the conclusion, that mainly the
schizomyces can exert a dangerous influence on man, as with
rare exceptions they are the only ones, which can penetrate living
tissues. Mould-fungi need access to free oxygen and can thus
only occupy outer surfaces; saccharomyces can exist and then
scantily only, when perhaps in the stomach or intestines a slight
alcoholic fermentation proceeds. Either class, however, may
assume, as well as schizomyces, formidable proportions and
power in some diseases, for instance in cystitis, diphtheria,
&c. Schizomyces can become highly pernicious through their
enormous vegetative power, which exceeds that of all other
organisms, and which is so great, that by the ordinary temperature
of the human body in every twenty or twenty-five minutes their
number may become doubled. The end result of this "struggle
for existence or predominance" is dependent on the specific
nature of the schizomyces, on the copiousness with which these
organisms penetrate the tissues; on the chemical condition of the
fluids which pervade the latter; on the presence of poisonous
matters of decomposition, which greatly supports the spread of
the penetrating fungi. The highly injurious or detrimental effect
of the schizomyces, when active within the bodily substance is
produced by withdrawal of the best nutritive particles and by
depriving the blood corpuscles of their oxygen, by changing saccharine and other nourishing fluids through fermenting processes, by generating putrid products of decay and by creating ferments, through which normally solid and insoluble substances of the body are dissolved and decomposed.

IV.—Infective Substances.

Infectious matters cannot be gaseous, otherwise they would soon expand and diffuse to such an extent as to become quite harmless. A quantity of poison, which under ordinary circumstances is borne as innocuous, can if thousandfold or even millionfold divided become readily infective. Hence it is clear, that the infective principle can neither be of chemical anorganic nature, but must consist of organic living structures; because only through them an augmentation from an infinitesimal minute quantity to such an extent as to become dangerous or destructive to the human body is possible. Among all the known organised bodies, the schizomyces alone can be identified with the subtle infective principles, which are capable of such vast, rapid and unlimited extension; they moreover possess the (for such functions) requisite minuteness and diffusibility, as well as all other physical requisites, to enter into contest with the vital power of the animal and human constitution. The infective fungi are specifically different, in so far as they produce distinct diseases; but this difference may possibly rest merely in a peculiar adaptability of the species, or it may perhaps depend on the adherence or absorption of some poisonous principle to these organisms, or it may be peculiarised by the location of the morbid processes producing each distinct disease.

The infectious principles of contagious diseases, which emanate from morbid processes of the human body, and are contained in its dejections (desquamations, perspiration, mucus, pus, vomicata, egesta, &c.) are transferred from person to person; in them abound peculiar schizomyces, endowed with special adaptation (contagium-fungi). The infectious principles of miasmatic diseases originate either on or in soil or water, and are again replete with schizomyces of peculiar adaptation.

The infectious principles of septic diseases manifest themselves through putridity, originated again by peculiar fungi, which may be the bearers of a separate putrid matter also. It requires a larger quantity in these cases, as compared to those of contagia and miasmata, to bring dangerous diseases about.

The individual disposition for infectious diseases consists herein, that locally or generally the chemical condition of the humours becomes so much altered from the normal state, that now the infection-fungi can overcome the resistance of the vital power. The contagium-fungi are the most infective of all and are transmovable to wide distances. The miasma-fungi are less energetic and are not transportable. The putrefication-fungi require a copious introduction to effect disease.
In miasmatic-contagious diseases—cholera, typhus, synochus icterodes, it is requisite, as shown by Pettenkofer, that two conditions should act unitedly to produce effect, one of the two emanating from a patient, the other from the soil; two theories on the subject are possible—the monoblastic, according to which the germ of the disease, emanating directly from the human body, must pass through a stadium in a soil fit for the incubation of the germ; or the diblastic theory must be adopted, namely, that a malarian or any other soil not of immunity, produces a miasmatic infection, rendering the patient susceptible to the contagium from the human constitution; according to the monoblastic theory, as the word implies, only one transformed germ of disease reaches the human body; according to the diblastic theory two separate germs unite within the body, to produce the miasmatic-contagious disease. Dr. Naegeli inclines to the diblastic explanation. Against the monoblastic explication speak:

1. The course of the epidemics.
2. The longer duration of some epidemics on shipboard.
3. The manner in which some particular persons are seized by the disease on seaboard.
4. The way in which persons are affected on soil of immunity.
5. The non-transferability of the contagium from an infected ship to the crew of a ship free of disease.
6. The non-transferability of the contagium from an affected district upon the inhabitants of a soil free of malaria.
7. The exact circumscription of the epidemics within such subsoil as is malarian.
8. The importation of small house-epidemics into otherwise healthy localities.

The circumstances, that infection-fungi emanate from other schizomycetes, that they are subject to more or less alterations, and that they finally pass again into other forms, are explanatory of the inconsistency of the diseases during a single epidemy, or in the course of their whole history.

The miasmatic-contagious maladies spread from centres, where through the action of particular fungaceous growth in the soil they are ever anew originated. Beyond these centres the epidemics die out, perhaps through the debilitation of the contagium-fungi.

Contagious principles lose their infective power at once through certain degrees of heat, through intense exsiccation in a short time, through putrefication, i.e., through metamorphosis of a contagium-fungus into any other form within the cyclus of life of the particular species. They remain longest dangerous if they become only so far exsiccated as to render their vitality merely
The infection-fungi, when touching or penetrating any portion of the body, stand in need of vast multiplication to initiate serious symptoms of disease; moreover it seems likely, that they must undergo some change of form or nature; and to bring the disease to a climax, they must by their decomposing power and perhaps also by mechanical accumulation induce a complicated series of disturbances in the system; this is the cause of the defined incubation time of the disease, and of some or all its diagnostic peculiarities. After the irritation, produced by the copious vegetation of the schizomycetes within the human organism, follows a reaction, by which the normal chemical condition of the humours is sought to be regained. Recovery is only possible, if this normal chemical constitution of the fluids of the human body is so far re-established, as to offer sufficient resistance to renewed inroads of the fungi. This protection against a relapse, according to its greater or lesser extent, determines the time of convalescence. A miasmatic-contagious disease can by vaccination only be transferred to a person miasmatically prepared for it. Purely miasmatic maladies cannot be propagated by inoculation. All purely contagious diseases, on the other hand, are directly transferable through vaccination, because the susceptibility (beyond an individual disposition) is unconditional.

In special contagious diseases (variola, rubeola, scarlatina) the fungaceous poison-principle passes simply and immediately from individual to individual. The schizomycetes by themselves, after due ablution, when entering the system in moderate numbers, exercise but very little influence; but when very numerously absorbed, they call forth disease. (The putridity secreted by the vital process of these creatures of marvellous minuteness is in all probability the very poisoning principle, adherent or inherent or developed, which sets up the disease, and becomes in its augmentation, corresponding to that of the schizomycetes themselves, so dangerous. An independent poison, of which the entering schizomycetes would only be the vehicle, can hardly be imagined to become by mere chemical action so extensive as to produce formidable changes in the human constitution; hence the fungi themselves must probably be regarded the sole contagium, and as in any processes of life even of the minutest organic beings assimilation must be followed by secretion, it seems to me most likely, that irrespective of the absorption of oxygen and perhaps other disturbances caused in the human system by the life-process of the schizomycetes, also the secreted matter of these creatures may contribute to the causes and courses of the contagious and miasmatic diseases, if not indeed perhaps these very secretions are the real principles of these maladies.—F. v. M.)

In intermittent and remittent fevers, we have solely to deal with malarian stagnations as their cause, though season and particular localities are also main-factors in these calculations. Dr. Naegeli found, that the miasmatic fluid acts most severely...
when it reaches the circulation immediately, less powerfully when the *schizomycetes* are removed from the fluid, (though of course their morbid secretions would remain.) Dr. Naegeli however assumes, that an independent morbid poison accompanies the fungi, of which the latter are merely the mechanical bearers; (but this remains in our present state of knowledge a mere conjecture.) If *schizomycetes* obtain copious access to wounds, putrescence takes place, followed, if not timely prevented, by pyemia and septicemia; but if, according to the precautions of Lister's method, carbolic acid or other antiseptics are applied, the fungi as well as their adherent poison-principle (which latter is probably generated by them) are destroyed. Normally, always some *schizomycetes* exist in the blood; but in certain abnormal states of the blood they are found enormously multiplied, especially at the height of the malady. (In those infectious diseases, in which the fungaceous organism have not yet been found largely concomitant to morbid processes, they may not have been discerned, possibly because they may be still more minute than those of some of the simply contagious diseases which also remained so very long unobserved. The recent discovery of the satellites of Mars furnish an analogous example of long concealed yet anticipated objects of nature in an analogous manner, though in another branch of the natural sciences.—F. v. M.)

V.—Distribution of the Infective Principles, and their Ingress.

The contagia, in the minority of cases, pass directly on to the healthy body (*e.g.* diphtheria, variola). According to Dr. Naegeli's observations they are rarely transferred through water, as he considers that the contagium-fungi readily succumb in water, or undergo metamorphosis in it. As a rule the transfer of these kinds of fungi takes place in a dry state, wafted onward by the air, or by adherence to any sort of article. Miasmata came to us always, according to Naegeli's views, through the air as the minutest dust-particles. The various degrees of the spreading of epidemics depends on the circumstance, whether the fungi are carried simply and free through the air, or whether they adhere accidentally to any other substances, or whether they are surrounded by calloid or any other matter. The infecting fungi, under ordinary circumstances, cannot enter the unwounded surfaces of the human body, neither through the cutis nor through the mucous membranes; it is only in the capillaries that they find the conditions necessary for their life and nutrition. Even in diphtheria, though the mucous membrane is directly attacked, there is no exception to this rule. In the stomach and intestines the *schizomycetes* are rendered inactive by the free acids, and also the gall-salts. However, they occur always mechanically and often copiously in the intestines, but are not absorbed into the system, seemingly on account of their solidity, otherwise pyemia would ensue. Only in the lungs they may likely enter
the capillaries of the alveoles independently, as their vivid progressive motion in a twisting direction may pierce the thin and soft walls. But the easiest way, in which the fungaceous infecting substance is absorbed, is through the wounds particularly through the mucous membrane of the mouth, which is so readily mechanically wounded. The contagium-fungi are more easily absorbed than the miasma-fungi. After strong increase in the capillaries they pass on into the general circulation and into the lymphatic vessels. According to Professor Naegeli the infecting fungaceous substances leave the body of the patient neither by respiration nor by the gases emanating from the dead; they pass merely off in the egesta, sputa, pus and desquamations, and from them enter the air only after exsiccation. Desert-regions as well as larger bodies of water are free of miasmatic fungi. The infecting fungi in a moist state do not retain their activity longer than a few days; they may become transmuted into harmless forms, more quickly in warm than in cold weather. Frost and mild antiseptics are able to preserve them for longer periods. In an air-dried state they retain their specific character for a long time, but in strong heat they become destroyed. A putrescent liquid, though it may exhale offensive gases, does not infect unless by actual contact.

VI.—Hygienic Properties of Water.

The communication of infectious diseases by means of drinking water, even when stagnant or when taken from polluted rivers, the author considers almost an impossibility:—

1. Because any dangerous *schizomycetes* soon undergo transformation in the water.

2. Because they lose their efficiency in the stomach.

3. Because we consume with our food daily enormous quantities of *schizomycetes* in the form of cheese, curds, cold meat, &c., without the slightest injurious effect on our systems.

Several authorities, for instance Pettenkofer and Dr. Cunningham, have recently testified to the harmlessness of drinking water, even when taken from a river one mile downwards from where it was used as a bathing and washing place at the time of cholera.

Regarding the effect of the drainage of cities conveyed into rivers, Dr. Virchow states that in Berlin, immediately at the spot where the large drain empties into the Spree, and which there presents a most filthy appearance, fish-life is more abundant and more vigorous than at places above and comparatively pure.

The chemical and microscopical investigation at the present state of our knowledge—unless in regard to chemical poisons—
gives no clue whereby to judge the suitability of water in a sanitary point of view.

To free the water from the germs of *schizomycetes*, filtration alone is insufficient, on account of the minuteness of these organisms, but if allowed to rest for a few days, or particularly after having been boiled, water may be considered as perfectly harmless.

**VII. — Hygienic Properties of the Atmosphere.**

The atmosphere is the medium through the agency of which infectious germs are most generally disseminated, after they have been reduced to a state of most minute dust by desiccation. To give an idea of the subtleness of this infectious dust, the author distinguishes between *ordinary dust*, which may be seen by the naked eye; between *sun-dust*, which is invisible in ordinary reflected light, but becomes visible in the beams of the sun or electric light, and between *invisible dust*, which is only perceptible under powerful microscopes, and which contains the infectious fungi; he further considers, that their number will decrease inversely to the square of the distance, and that accordingly their influence will only be felt in an immediate vicinity.

The gases originated by the putrefaction of organic bodies, though offensive to the senses, are harmless when occurring highly diluted with air, while the real contagia, *consisting of the dry fungi*, are perfectly inodorous. Therefore, Naegeli says, "the sense of smell is no test for or against the salubrity of a locality."

The microscopical and so also the chemical investigation of the atmospheric dust, obtained by filtration of the air, does not enable us as yet to judge of the salubrity of the air, because our knowledge of the infectious fungi is hitherto too limited. It is only by experimental tests instituted with the dust-fungi that we shall be able to judge fully and finally of the extent of their harmfulness as contagium. Our senses are in no way susceptible to recognizing the presence of *schizomycetes* in the air. It is impossible to guard towns or any dwellings against infection by the air,* but persons forced to visit sick-rooms or other unhealthy localities, may with advantage protect themselves by a respirator, kept moist by means of water, or better still by glycerine. (In regions, where paludal fevers rage, quinine should be taken prophylactically.—F. v. M.)

**VIII. — Hygienic Properties of the Soil.**

Of the conditions most favourable to the growth of the microscopic infecting fungi, the author mentions a *clayey soil*, capable of retaining moisture for a lengthened period, but porous.

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* Unless perhaps by extensive forest-plantations in their immediate vicinity.—F. v. M.
enough to admit of the free access of the atmospheric oxygen; rain or other moisture, to maintain the soil in a wet condition, but not sufficient to wash the germs away; a temperature of about 37° C. (= 98° F.); the presence of decaying vegetable matter in the soil; ground-water accessible to the atmosphere.

Contrarily, the conditions unfavourable are—excessive dryness, a gravelly soil, low temperature, equable stagnancy of water, impediment through vegetation; in the latter case the superior energy of higher plant-life, which through the action of the roots, keeps up a successful competition against the infectious fungi. The author also contends that, as the miasmatic fungi are different from the septic fungi, it is highly probable that in soil, where putrefaction takes place, no miasmatic fungi will be found, as the latter are liable to be destroyed by the former.

The conveyance and distribution of the miasma-fungi is effected by the currents caused by the fall of rain on pulverulent soil, by the variations of atmospheric pressure, by the wind exerting either a current or a suction on the soil.

The entrance of the fungi into the atmosphere may be prevented by filtration through a moistened layer of earth of sufficient thickness. Even coarse gravel of twenty centimetres (eight inches) thickness when moistened intercepts the finest particles of dust.

All our present experience confirms the idea, that miasmata are bred only in an inodorous soil.

Anti-malarian localities, according to the fungaceous theory, may be either those which offer no opportunity for the growth of the fungi, as arid deserts, land without ground-water, solid rocks with a covering of sand or of clay or humus of little thickness, or surfaces which prevent the entrance of the minute organisms into the air, as the ocean, or such rivers lakes or swamps, which never exsiccate.

The depths of the cellars of buildings, by penetrating different strata of soil, may so far alter the immunity, that of two adjoining houses, the one may be unhealthy, the other quite the reverse, as seems to have been noticed in Munich. The danger increases in proportion as the ventilation of the rooms is less, and the more the inhabitants are compelled to refrain from outdoor exercise.

All schizomycetes originate in moist or periodically inundated, never in dry soil. Where permanent ground-water exists, their development occurs in that stratum of the soil nearest the water, and so far upwards as the moisture by capillarity is able to penetrate. Mould and some other putrefaction-fungi overpower the schizomycetes, whenever the soil abounds in organic matters.

Miasma-fungi originate in soil free of putrid decaying substances, and seem to need for their nutrition ammonia and humus, both of
which are not wanting in the purest soil; but where the humus-soil is never flooded, the miasma-fungi perish through too powerful oxydation. Vegetation of any kind in such soil interposes mechanically the escape of the schizomycetes; they are set free in the atmosphere by the currents of air, which in various ways may arise. In the soil, while wet, the miasma-fungi are copiously developed, but they become liberated only when the ground dries up. A porous soil becomes the more dangerous, the nearer the ground-water rises to the surface. Thus it is, why in some districts whole landscapes become miasmatic, while in others only isolated spots, such as particular streets &c. are affected. Indeed, only certain rooms of a dwellings may become dangerous, particularly at night time, when a current of miasmatic air, from the cooler strata beneath, may rise into any dry warm and closed rooms.

In order to determine, a priori, for any given locality its sanitary conditions, it is necessary to investigate all those causes which influence the growth of infectious fungi (in regard to soil, moisture, temperature, vegetation, currents), or their distribution, and from these data it will be possible to draw trustworthy conclusions and to adopt measures to counteract their injurious influence.

Of importance in reclaiming unhealthy soils will prove:—

1. The drainage of the soil and carrying off of the ground-water, so far as this can be effected.
2. The constant and equable inundation of such portions of the soil as cannot be drained.
3. The covering of the soil either with a dense vegetation or with a layer of clay, humus &c., or in the case of buildings, with cement or asphalt, to prevent the ground-air from escaping into inhabited places.

Professor Naegeli concludes his important volume with three lengthened chapters on the removal of egesta, on the burial of the dead and on the preservation of health, as well in centres of population as in any dwellings. The sanitary measures proposed by him are either such as are recognised here as elsewhere, or they are based on the teachings of the previous chapters, or they are less applicable in a clime like ours, as compared to that of Bavaria, where the eminent writer instituted his researches. It was therefore not deemed needful to refer to these three chapters, at least on the present occasion. One of the main objects of this cursory reference to Dr. Naegeli's work will be attained, if thereby the attention of medical practitioners and sanitary officers in any English speaking community is more fully directed to these extensive and largely original essays, which, it is hoped, will early re-appear in an English translation.
MEDICAL SOCIETY OF VICTORIA.

ORDINARY MONTHLY MEETING.

WEDNESDAY, NOVEMBER 6, 1878.

(Hall of the Society.)

Present: Dr. Graham, Mr. Ralph, Dr. Fishbourne, Dr. Bowen, Dr. Jamieson, Dr. Neild, Mr. Rudall, Dr. McMillan, Dr. Le Fevre, Mr. Wooldridge, Dr. Alsop, Mr. Morton, Dr. Singleton, Mr. Girdlestone, Mr. Gillbee, Dr. Webb.

The President, Dr. Graham, in the chair.

CORRESPONDENCE.

A letter was read from the Attorney-General, in reply to the one conveying the resolution on the subject of the Medical Act Amendment Bill, informing the Society that the Government did not intend to support it.

DEATH OF MR. WHITCOMB.

The Hon. Secretary reported the death of Mr. H. M. Whitcomb, in England, in August last.

NEW MEMBERS.

Mr. William Garrard, of Collins-street east, and Dr. Dowling, of Richmond, were elected ordinary members.

Three gentlemen were nominated.

CASE OF INTUSSUSCEPTION.

Mr. Wooldridge read the notes and exhibited the preparation of a Case of Intussusception in a child eight months old. He had been called to the patient on October 29th. The pupils were dilated, the skin pale and the fontanelles depressed. There was no congestion of the gums suggestive of irritation from teething. The collapse was very apparent. The abdomen to the right of the umbilicus was tympanitic. The child had been suckled until a fortnight previously, after which it had been fed with bread and milk. It was at first regarded as a case of colic obstruction. He gave two grains of calomel, and a mixture of sp. am. fetid, with dill-water. In the evening some blood was passed per anum. The collapse was greater and the tympanites more considerable. The next day at three p.m., in consultation with Drs. Graham and Bird, an emulsion of castor oil was given, and a grain of calomel with two grains of jalapine. There was no action of the bowels, and death took place in the evening.
The post-mortem examination showed an extensive invagination of the ileum into the ileo-ccecal valve, and considerable thickening and congestion of the parts.

Dr. McMillan inquired if enemata had been employed. It was evidently a case in which purgatives were useless.

Dr. Graham replied that enemata had been used, also half-drop doses of succus belladonnae; afterwards strychnine. There was no vomiting.

The following paper was then read:

NOTES OF A RECENT CASE OF SOFT CANCER OF THE LIVER, CO-EXISTENT WITH HYDATID, WITH OBSERVATIONS AS TO THE POSSIBLE RELATION BETWEEN THE TWO DISEASES.

By Thomas Shearman Ralph, M.R.C.S. Eng.

The case which I now bring before the notice of the Society is one fraught with interest, both as to the past and also the future.

It is one which, I believe, as far as the experience of many is concerned, is unique, and I think when such cases cross our path and come under our notice, they should engage our deepest attention, as they may be the means of more effectually investigating and perhaps clearing up the true nature of some obscure pathological condition.

The plan I propose following is to narrate the general history of the case as far as I have been able to gather it, then direct attention to the results of microscopical investigation and the conclusions arrived at, the result of the case, with the post mortem and microscopical investigations, and then endeavour to show what points of resemblance can be brought forward to illustrate the aim of these notes, i.e., the possible relation of cerebriform, or soft cancer, to hydatid disease.

The subject of my notice was well known to me for some years, and I consider him to have been a healthy man. Several of the members of his family and his parents also have been under my observation, and I have every reason to believe they are quite free from any cancerous taint.

It appears that he (the subject) was rather suddenly taken ill with general symptoms of collapse, accompanied by pain and distress about the epigastrium, somewhere about the 18th of June last, and in consequence was laid aside from work for a few days. The view which was taken of his case was that a hydatid tumour had probably burst in the peritoneal cavity, and some mild symptoms of peritonitis appear to have supervened.

About three weeks or a month after he was seen by another medical practitioner, in consultation with his first attendant, and the surmise of hydatid disease was still entertained, but
some suspicion of cancer of the liver arose in the minds of his attendants. There was then a distinct swelling below the edge of the liver, with some indication of a nodular state in or about that organ. In order to ascertain the nature of the case, a fine trocar was introduced about two inches below the ribs and three to the right of the linea alba. Nothing seems to have been obtained from this exploration but a small quantity of blood, which merely trickled down the side of a large bottle in a narrow stream, and was left unexplored. Some ten days or thereabouts after, the tumour appears to have been noticed as extended below the umbilicus, and about two inches below this point a trocar was introduced, and by means of an aspirator about an ounce and a half of blood and serum was removed.

The examination of this under the microscope yielded to the observer cancer cells. At this point of the case, i.e., about the 20th of August, the above-mentioned fluid, which was about two days' old, was sent me for examination.

The first investigation of its nature made me satisfied that it contained parasitic elements, which opinion I immediately expressed by letter to the medical man in charge of the case, adding that, in consequence, I could not view it as a case of cancer, as I had no knowledge of the coexistence of the two diseases. I then saw the patient, and from that period attended him to his death, which took place some eight weeks after.

The condition of the patient at the time I first saw him was as follows:—There was no special cachexia indicating cancer. The abdomen was occupied by a large distinct tumour, having a lobulated form, extending from the edge of the liver to about three inches below the umbilicus, and laterally five or six inches to the right of the linea alba, and about three to its left; and yielding some fremitus. The girth of the abdomen on a level with the umbilicus was 34 1/2 inches; while that on a level with the lower ribs was 35 inches.

One month after, the following change was noted—girth, on level with umbilicus, 36 inches; lower ribs, 37 inches. I also noticed that the dulness above the liver extended nearly to the nipple; the intercostal spaces being enlarged, the right side of the chest measuring one-and-a-half inches more than the left.

So fully was I satisfied of the parasitic element being present in the case, that I advised a fuller exploration, in order to set all doubts at rest; for I found, on consulting those who had preceded me, that they were fully persuaded that the case was one of cancer, and they almost entirely dismissing the idea of any hydatid cyst, while I, on the other hand, felt convinced that one had been explored, and had yielded results which had not been recognized. Thus the case proceeded for a while, when about the 18th of September a third exploration was made, more to the right of the first, and below its level; by this, a very small quantity of blood-coloured fluid was obtained, which was withdrawn with difficulty by the aspirator. The result was not immediately ascer-
tained, but several days after I found two hooklets of an echinococcus in a coagulum of blood, which was withdrawn from the tube. The other materials did not yield exactly the same result as the first and second explorations had done; yet they were to my mind parasitic as to their character. Within forty-eight hours after the operation a great portion of the skin was affected with an irritable red rash, and from the point of the punctured spot the integuments became edematous with blood-coloured serum, the swelling extending over the right side of the chest, up to the nipple and down as far as the groin; this passed away gradually after a week or so.

The discovery of the hooklets thus obtained, giving satisfactory evidence of the parasitic nature of the disease, induced a proposal for a further operation, which was fully to set at rest the nature of the tumour below, or to promote its removal, for doubts were still held out against the hydatid view of the case, and at the same time the following expression was used, to the effect that if one was quite certain of the hooklets being obtained from the liver, we might dismiss the cancer view of the case.

An exploratory incision made below the umbilicus led to the determination that no further attempt should be made, as the tumour appeared to be cancerous, but was not penetrated, nor was the peritoneum cut into. Death took place twenty-four hours after from exhaustion, which had been coming on during several days prior to this event. The sufferings of the patient were considerably alleviated by the frequent subcutaneous injection of morphia during the last four weeks of his life. I may here notice that food was constantly or rather daily rejected by the stomach, and as some suspicion arose that an opening into it might have taken place, the discharges were examined, but nothing satisfactory indicating or confirming such a view was afforded.

Post mortem examination.—On laying open the chest and abdomen the heart and lungs were found healthy; the diaphragm above the liver was pushed up as high as the space between the fourth and fifth ribs. The stomach was completely pushed over to the left side by the enormous size of the liver, which presented on its anterior surface two cancerous nodules and two large cerebriform cancer-masses, extending from the edge of the liver down to half way between the umbilicus and the pubes; the small intestines were agglutinated at portions below and behind this mass, and there was a considerable amount of blood-stained serum effused into the cavity of the abdomen.

The impression conveyed to those who were present was that the first diagnosis was the right one, and under this some left. I proceeded, with the help of my friend Dr. Fishbourne, who conducted the post mortem examination for me, to examine for a hydatid cyst. This was found at last ruptured, and situate behind the gall-bladder, at which part you may see its remains. The cancer element had literally ramified through the liver in
all directions, so that when a nodule was cut into, it could be traced in a narrow band of cancer matter deep into the substance of this organ.

At this point of my observation I will now direct your attention to the facts obtained by the explorations. The first made below the edge of the liver contained, as far as I could ascertain, no cancer elements; in it I found ova-like bodies and plenty of fragments of some parasitic form. In the second, which you will remember came to me first for examination, and obtained from below the umbilicus, I found two ova-like bodies, besides various matters which I referred to parasitic origin; and from the third exploration I obtained elements of a parasitic nature, and ultimately hooklets. Here then we have an important point to consider, the first exploration pierced into what? a cyst, or a cancer mass, with parasitic elements? The second exploration, as we know, entered a cancer mass and yielded undoubtedly parasitic elements; and as I said to Mr. Girdlestone, on examination of that portion, I quite justify you in calling those cancer cells, they are so recognised; but I have noticed such like from pure hydatid cysts obtained from a sheep, and the difficulty was to believe that the cancer element was inextricably mixed up with parasitic objects.

Thus, the issue of the case has been, that all parties concerned have been right, and the wrong has been the exclusion of the other element, and this because the two diseases could not be supposed to be co-existent in the same spot; so that when a trocar was introduced into a cancer mass, it brought away both cancer materials as well as elements yielded by a hydatid cyst.

We have come thus far in the history of the case. What was its origin? Are we to consider that a hydatid cyst existed in the liver and that at the same period a cancer mass also ready to develop? Or shall we regard it as a case in which a hydatid cyst having discharged its contents, these themselves have gone on to constitute the cancer growth? Of course the former is the most facile view to adopt, but is it the most philosophical? Will it do for us to rest here and wait till hydatid cysts are more frequently observed in cancer masses of this kind. For perhaps these may not have been fully searched into for any such element, in or immediately about them, and indeed in this very case, if it had not been for persistent search, the fact would never have come to light, and your colleague would have been left out in the cold and obscurity.

I come now to that portion of my notes, as to the possibility of the relation of these two diseases. Let me then place before you a few facts which must be taken in faith, until some have taken the matter in hand for themselves and examined them, and also, until further experiments and observations have been instituted, with the object of correcting or confirming these views of mine.

I know that what I have to advance, as to the connection between soft cancer and hydatid disease, is likely to be met by
this objection, i.e., that numbers of cases of cancer of the liver have been noticed, and that no traces of hydatid have been detected, hence, what I may have advanced is merely a surmise and no more. I object to this line of argument, it is much of this nature: as if we were to say, that of the numerous cases of hydatid cysts which have been noticed occurring in the liver, no one has ever seen a tenia in any such cyst, and yet it is admitted on all hands that hydatid cysts are derived from tape worm, which amounts to saying that these cysts are of parasitic origin. Hence, I would state it thus, that soft cancer may be of parasitic origin, and that the parasite giving rise to it need not necessarily be always a hydatid cyst. If we view the matter under this aspect, and I believe it to be the most reasonable one, we shall not at once close the door of the hypothesis (not to call it a theory) of the origin and connection of these two diseases, as we should be apt to do if we lent an ear to the adverse argument to which I have alluded.

First of all, in order to clear the way, let me remind you that the elements which compose the majority of hydatid cysts are not known. These cysts contain so many different forms of organic cells, that it is impossible to convey by words and descriptions, or diagrams, any distinct idea of the size, number and relationships, and yet all these peculiarities need to be studied carefully ere we can be in a position to deny their value as indicating a relationship to cancer cells, and the progress of that disease.

In order then to illustrate my views, I must begin at the hydatid cyst proper. Now, these cysts are scarcely ever alike in all their details, and it is by carefully examining their contents, that we can expect to arrive at a knowledge of the great variety of objects which can be obtained from them. In the first place, we have in many cysts a thick jelly-like wall of the usual laminated character; embedded in these walls are organisms of various degrees of development, and it is to such I desire to call attention.

Here is a portion of a hydatid cyst: the walls are laminated, and at one part we see an ovoid or pear-shaped body surrounded by layers of hydatid membrane, and in the interior of this body we see a number of various sized objects, some of them are granulated. This represents a young state of a secondary cyst, or perhaps a grand-daughter cyst, as it is termed. Also, we have objects of of an inch in size, of a pale yellow brown, the surface closely studded with clots, or prickles, or elevations. Here again is another—an oblong body, with thick walls and containing granular matter; its nature I have not been able to determine, it appears to be cylindrical. So again, there is another form obtained from a hydatid cyst—it is irregularly triangular, with a dense wall and a central nucleus of a yellowish tint, and another apparently of a rounded form.

The common or well-known echinococcus form is sometimes not to be met with, while at others they are present in hundreds, and when pressed there are also many to be seen in an embryo
condition, wherein no hooklets can be traced. These echinococci are usually about, and when fully developed exhibit in their interior a variable number of oval or rounded shining bodies, which are apparently homogeneous. If we place these on a slide, charged with glycerine and gum and a little salicylic acid, and take care to mark down our specimens, we shall in the course of a few days note that some of them will have undergone some changes—not decomposition—but organic changes, and that some have advanced further than the rest. As for example, in one, a central clot or nucleus will be noted; in another, a line of separation following the contour of the oval or round body, and so in process of time a separation effected between the outer and the inner portions. In others, vacant spaces will make their appearance and ultimately, I have observed, that others have given rise to three cells closely united and presenting all the characters of a minute hydatid cyst. Almost every organised element contained in a hydatid cyst I have noticed has undergone change—not decomposition, but an increment or change of form—and this has occurred at ordinary temperature of a room, i.e., from 60 to 80° F., and during a period of a few days to a few weeks, the action of the salicylic acid not causing their organic life to cease, while putrefaction and bacteria forms appear to have been excluded. And I believe this process goes on while their proper pabulum exists, either in the fluid around them, or in the neighbouring objects with which they may be associated, as flakes of hydatid membrane, &c. Now, all these points are in keeping with what we commonly meet with in a largely developed hydatid cyst, wherein we obtain daughter cysts, grand-daughter cysts, great grand-daughter cysts. The lengthened life and opportunities for extended growth and favouring circumstances afforded in the body of the animal occupied by the mother or primary cyst, aid in such development. Hence the necessity for repeated observations on the contents of all cysts. It was from such observations years ago I was led to suspect that cancer might in some way be related to parasitism, and I find the following note in my microscopical memorandum, being dated 1865:—"Can cancer be shown to be of parasitic origin," and this with reference to hydatid disease.

And now I will point to another set of facts which I have derived from observations made on the cancer materials which first came into my hands in this case, wherein I noticed from the first a great number of large pale solid-looking bodies, or nuclei, contained in the general mass of cells of all kinds. These nuclei after having been kept in glycerine and salicylic acid have undergone changes—inasmuch as many of them have become cellular; first developing a nucleus, and then exhibiting cavities in the general cell covering. These nuclear bodies are of the same size and appearance as those which occupy the two remarkable ova-like bodies to which my attention was directed in the first instance, as I have already noticed. And again, I have
already observed that other objects have also made increase, and these changes I cannot refer to a process of decomposition, but to growth.

So, again, in order that we may become more certain of the relationship of these two forms of disease, it will be necessary for us to cultivate or keep the so-called cancer cells of soft cancer under continued observation; and I may here notice that at present I have not been able to keep such specimens at a temperature of 90-95° F., in order to facilitate their transformation—a degree of heat which we may reasonably suppose will be more in accordance with their natural condition within the body; and it will also be necessary to supply various kinds of pabula, such as serum, &c. One precaution I must here advert to, i.e., that such cancer cells and hydatid cells should be taken first from the animal. Most of the elements derived from a dead body having been in some degree subjected to the action of gases resulting from decomposition, as well as having been deprived of oxygen, supplied through the action of blood while in the living body, are very likely to fail us in our experiments, and in place of undergoing and exemplifying organic change, suffer decomposition. Observe also a feature in this case in keeping with the views I am advocating: when a nodule of soft cancer was cut into it could be traced down into the body of the liver like a narrow band, as if the cancer element had ascended through the liver substance, and when freed from the surrounding pressure the cancer materials situate on the surface began to expand in a nodule or globular form; and we are pretty well assured that when pressure on a hydatid cyst is lessened, it also rapidly expands by growth. In fact, the investing envelope of the hydatid elements constitutes the safe preservation of them from diffusion; and when rupture occurs we have peritonitis, or pleuritis, as the case may be, mild or severe. And if the hydatid elements come into contact with nutrient fluids, they will rapidly bisect, and repeat themselves as far as the powers of each separate organism, and we have then soft cancer to consider and observe. Here, then, we have a nodule, and in it we have found undoubted hydatid elements, say, a cyst of minute size (minute as compared with the parent cyst). Whence came this cyst into this position—into the nodule? Are we to suppose that when the hydatid burst, this particular small cyst travelled through the liver substance to the part where it was found—a distance of two or more inches from the ruptured cyst? Or is it not more in accordance with our knowledge of growing bodies, that this particular cyst was evolved in the part where we met with it, and therefore it was a descendant of the cells which preceded it in other localities in the liver? We are bound to offer some mode of explanation of such phenomena, or else acknowledge our ignorance.

Let me here briefly allude to some general matters for consideration. There are various forms of cancer now admitted to
exist. Cancer seems also at first to be a localised affection, and when thus established becomes diffused, very likely through the blood, to other parts or organs. Again, is it not a question for us to consider, whether, in a country eminently marked by the presence of hydatid disease, both in animals and man, we are gradually adding to our number of cancer cases; in other words, is not cancer on the increase?

I am fully aware that I am venturing upon untrodden ground, and that everyone so doing is liable to be suspected of being biased in favour of his own special views. What, therefore, I claim is a hearing, and that whatever adverse or opposing arguments may be brought forward, they shall have for their basis a fair knowledge of the objects which constitute the ground-work of this communication, our aim and desire being a distinct advance in our professional career, and the future benefit of our race.

Mr. Girdlestone said the theory propounded by Mr. Ralph, although interesting, was not new. Mr. Ralph, however, was well qualified to pursue such an inquiry as this case suggested. A great deal would have to be proved to establish the truth of the proposition. He (Mr. Girdlestone) did not think the present case took him very far in the direction of a satisfactory conclusion. It was, however, interesting to look at the case from a practical point of view. He had seen the case during life and had pronounced it to be cancer. The patient had gone out shooting and had fallen, and was told that probably he had ruptured a hydatid cyst. It was some months after this that cancerous symptoms showed themselves. Drs. Brownless and Robertson also saw the case and pronounced it cancer. Explorations were made. On one occasion he punctured below the umbilicus, and the fluid showed cancer cells. Then Mr. Ralph found equally conclusive evidence of hydatids, but the opinion that the case was one of cancer was not disturbed, notwithstanding that Mr. Ralph's conclusions were not disputed. The prominent disease was cancer, and undoubtedly the patient died of cancer. The hydatids were of secondary importance; but the question, under the circumstances, was what to do? He had always been of opinion that nothing could be done. There was a large solid mass certainly cancerous, and it was clear to his mind it could not be removed, so that from a practical point of view the microscopical diagnosis was valueless. The appearance of the red rash on puncture of the cyst was an additional evidence in favour of hydatids, and it was always valuable as an aid in diagnosis.

Mr. Rudall had seen the case at a later stage, and he had made an exploratory examination. He did not think the diagnosis was conclusive as to there being cancer and hydatids. Mr. Ralph had shown him some structures resembling ova, but he could not recognise any as cancer cells. After he had seen a distinct echinococcus and hooklet there could of course be no doubt of the nature of the case. The previous history favoured the hydatid
opinion. He had suffered from some collapse when the cyst burst. Moreover, the physical signs included fluctuation, but that might be soft cancer. He rejected the idea of the two conditions, cancer and hydatids, coinciding. He could not discover any corroboration of the theory suggested by Mr. Ralph. He had consented to an exploratory operation, and he had opened the abdomen and had found evidence which forbade any further progress. He was then convinced there was encephaloid cancer, but as bold surgery had sometimes led to happy results in abdominal operations, he could not regret having made the exploration. He did not think the operation had accelerated death. He did not think that any cancer-formation could simulate a hooklet, and he regarded the case as unique.

Mr. Gillbee did not see any reason why the two conditions should not co-exist, and did not accept Mr. Ralph's theory that they stood in the relation of cause and effect. If hydatids were the parent of cancer, we should find them oftener in association. Of the cancer cell we knew nothing. It was not introduced from without, and how it came to be developed within the body we knew not.

Dr. Jamieson did not know what were the particular forms of the bodies exhibited; yet he begged to say that Mr. Ralph's argument as a whole was singularly inconclusive. The existence of cancer did not preclude the advent of hydatids. No doubt the case was interesting and difficult, and well-calculated to test the diagnostic powers of the most experienced. He did not think however that Mr. Ralph had represented well the transitional forms of growth. It was recognised that any cell-form of cancer could be found similar in some part of the body. They were derivative of structures found in other parts of the body. Mr. Ralph showed nothing to prove that the cancer had arisen out of the hydatid bodies. A first puncture had shown blood, and a second one hydatids; but this did not at all favour the relation of cause and effect of the two diseases.

Dr. Le Fevre thought that possibly the presence of cancer favoured the occurrence of hydatids. Thus, in operations, bacteria might be introduced; and so, in low conditions of the body, as of cancer, the ova of hydatids might find a favourable nidus.

Mr. Ralph, in reply, said the important point in his paper had not been noted. Thus, in a nodule of cancer there were found parasitic elements, and these were not a constituent of soft cancer. How came they there; they co-existed, and why? It was a matter to work out. He had had hydatid bodies for months on the slide, and the changes were still going on. He knew the difficulty the investigation presented. He had gone through it with an unbelieving mind, but he was still working on, and he hoped in the future to show more conclusive evidence of what now was only dimly seen.
THE SURGICAL DEGREES OF THE UNIVERSITY.

A meeting of the Senate of the University of Melbourne was called for October 30th, but it lapsed in consequence of there not being a quorum. As the business was to consider the regulations framed by the Council for the granting of degrees in surgery, this result is greatly to be regretted. More than two years ago, the Legislature passed an act empowering the University to grant degrees in surgery, and yet, up to the present time, the Council and Senate have not been able to agree upon the conditions upon which they shall be granted. It is probable that the compromise arrived at, and which would have been submitted to the Senate on this occasion, would have been agreed to, and that the numerous graduates in medicine, who have complied with the requirements, would by this time have availed themselves of the opportunity of completing their qualification. We say completing their qualification, for although everybody who knows anything of the University at all, is aware that the M.B. degree is virtually also a surgical degree, the public do not recognise it as such, and cases continually occur in which the surgical sufficiency of the M.B. degree is questioned in courts of law, and the particular competency of the holder therefore placed in doubt. It need hardly be said that this occasionally unpleasant experience is the reverse of encouraging. It is among the reasons which prompt students to desert this University at the end of their second year, and go to Europe, so as to get a complete medical and surgical qualification. The Melbourne University authorities do not appear to be aware that, as against British degrees and licences, the degrees of our own University are not held in favour, and it is unfortunate that no strong desire appears to exist to make them so. And this is true especially of medical degrees, which unlike those of arts and law, represent the actual professional qualification of the owners. Of the thoroughness of the education to be obtained by medical students in Melbourne, there is no sort of doubt, and of the respectability of the degrees granted there is equally little question; and with the
power so readily accorded by the Legislature to make the
degrees sufficient, it is something lamentable to think that
on a question of details which, after all, are of minor
consequence, there should be a delay in completing the
arrangements to grant them, seemingly interminable. It
really seems as if the charge, brought against the
University, of having subsided into a condition of
academic drowsiness were justified. It would be incred-
ible if the facts did not demonstrate it, that a body like
the Senate, consisting of two hundred members, cannot
occasionally muster up a quorum of twenty. It seems to
be only when there is an election of a member of Council
that a good attendance can be made sure of. When
there is work to do, and especially work in the interests
of the Medical School, nothing can exceed the disregard
of duty shown.

To the conclusion come to in the settlement, by the
Council, of the conditions upon which the degree of
Bachelor of Surgery is to be granted, we think little
exception can be taken. The point of difference in the
Council stood at the six months' further hospital attend-
ance, insisted upon for those already in possession of
the M.B. degree, and as there can be no practical difficulty
in the fulfilment of this condition, most of the bachelors
of medicine, indeed probably all of them, having already
furnished themselves to this extent, they are quite prepared
to apply for the surgical degree. As to all future candi-
dates, the slight additional examination in surgery cannot
with any reasonableness be regarded as a hardship.

The University of Melbourne.

OCTOBER TERM 1878.

EXAMINATIONS IN MEDICINE.

FIRST YEAR: J. Eadie, J. W. Florance, C. W. Günst, J. W.
Harbison, C. Hedley, A. V. Henderson, W. F. Miller, W. Moore,
F. Napier, F. J. Owen, G. Palmer, R. Rimmington, W. Robertson,
A. R. S. Stackpoole, J. C. Wight.

Eddy, E. S. Jackson, T. Loughrey, W. W. McGuire, J. R. Mullen,

THIRD YEAR: R. R. Harvey, A. M. McFarlane, R. Stewart,
A. Sutherland, J. R. H. Willis.
Contagious Diseases Hospital.


The following passed in single subjects:—Botany, M. Johnson; Comparative Anatomy, M. Johnson; Materia Medica, M. Johnson; Senior Descriptive and Surgical Anatomy, F. H. Eastwood and S. O. Higgins; General Anatomy, Physiology, and Pathology, A. C. Brownless, F. H. Eastwood, and S. O. Higgins; Surgery, A. C. Brownless.

Contagious Diseases Hospital.

A deputation consisting of representatives of the Collingwood City Council, the Fitzroy City Council and the shires of Jika, Heidelberg and Eltham was introduced to the Chief Secretary on Nov. 28th, by Mr. Tucker, M.L.A., the object being to protest against the erection of a contagious diseases hospital at the proposed site on the Heidelberg-road, near the Merri Creek Bridge. There were also present Messrs Mirams, Carter, Langridge, Ramsay, and Macgregor, M.L.A.'s. Mr. Tucker, in introducing the deputation, said the objections the deputation had to urge against the site proposed on the Heidelberg-road were that the land was a portion of the recreation ground of the Yarra Bend Lunatic Asylum, that the drainage from the hospital would flow into the Yarra, and by contaminating the water, perhaps disseminate disease; and that as it was in the neighbourhood of a large amount of population the value of property would be greatly depreciated. A further objection was that the hospital would be on the main road from Heidelberg to Melbourne. If it was necessary to have such an institution, some out of the way place should be sought for. He was well aware there would be objections raised to any site that might be chosen, but the drawbacks to the one proposed were so numerous and weighty that he was sure the Government would give way. He believed they could show the Chief Secretary a better site. Mr. Langridge suggested that the sanatorium at Port Phillip Heads could be made available. There was not likely to be a large number of cases, and it might be possible to use one of the hulks in the Bay as a receiving house. It would, in his opinion, be a great mistake on the part of the Government to erect a hospital on the Heidelberg-road site, as there was a large amount of settlement in the neighbourhood, and they would soon be asked to remove it. Mr. Ramsay also advocated the advisability of utilising the sanatorium at the Heads. He thought that failing any other a site might be found on the Keilor Plains near the railway, where there was no population at all. Mr. Macgregor urged that the hospital would be in dangerous proximity to the Yarra Bend and Kew Asylums, and that it would be a terrible calamity if contagious disease
should spread to the inmates of those institutions. Mr. Berry said the question had been a vexed one, and had been under consideration since 1869. After detailing the various attempts that had been made to obtain a suitable site, and the objections that had been raised in each case, he pointed out that although there was no immediate need for such a hospital, as there was not a single case to send to it, it could never be known when the necessity would arise. Under the Local Government Act every local body was bound to provide a building, and the question was whether that law should be enforced, or whether the local bodies should unite in building a hospital on the proposed site. The present site had been selected some years ago, and then the only objector was Dr. Paley, but he had now, although reluctantly, withdrawn his opposition under certain guarantees necessary for safety; and as such a length of time had elapsed, and no other objections being made, the site had been selected. Mr. Tucker, asked why Keilor-road could not be used. Mr. Berry said there would be objections. The buildings at Point Nepean would be better suited, but even they would likely be required for their legitimate purpose if an outbreak of small-pox occurred by importation. The matter was really one for the local bodies, and they would have to maintain the hospital. For years these bodies had neglected their duty, and whenever the Government proposed to do anything it was met by objections. Mr. Tucker asked if, in the event of the municipal bodies in and around Melbourne conferring on the subject, he would carry out their suggestions as to a site. Mr. Berry said he would at their expense, and provided the medical authorities approved. It was then decided that a conference should be held, and Mr. Berry promised to stay his hand for a month.

[The above is an average sample of the local selfishness which prevails all over this city. For several years, whenever it has been proposed to establish a contagious diseases hospital, the inhabitants of the locality where the site has been decided upon have protested against their neighbourhood being selected for it. They have been quite willing it should be built anywhere else, but not near their dwellings. No reasoning has been of any avail in dissuading them out of their fears. A really strong government would have built the place without consulting anybody but the chief medical officer. But it is just a strong government which we have not had.]

HOW TO KEEP CHILDREN HEALTHY.

The *Daily Telegraph*, of October 9th, offered the following good suggestion with reference to maintaining the health of our children, by means of occasional excursions into pure air:—"In another two months, the summer will be upon us, and judging from the
experience of the other hemisphere, there is some probability of its being an exceptionally hot one. In that event, we may expect the death-rate among children, which is always highest at that period of the year, to exceed the average. It usually reaches its maximum, we believe, in January; and the question arises whether something might not be done to lessen it in the summer months, especially among the children of the poor. For our guidance, information, and encouragement in this respect, we have the example set us by various benevolent organisations in the United States, and notably in New York and Philadelphia. In the latter city, a philanthropic association has established a day sanitarium on a quiet little island in the Delaware, near the city, where the river breezes are pure and cool. Tickets for excursions to the island are distributed by the city physicians and superintendents of the sanitarium to poor children suffering with marasmus, teething, or any other uninfectious disease; the ticket entitles them and their nurses to transportation to and from the sanitarium, and to a wholesome, plain diet while there. They go in the morning and return in the evening. In extreme cases, they remain altogether. The number of children thus rescued from the heat amounts to 800 daily. The working expenses do not exceed £6 daily, the food being provided by voluntary contributions. In New York, the children of the poor are taken down in large batches to Long Island, and to some of the most breezy of the villages on the coast, where the more delicate of them are permanently domiciled in houses set apart for that purpose. The Evening Post—the late William Cullen Bryant's paper—initiated a 'Fresh Air Fund' for this purpose, with excellent results; and we bring the matter under the notice of our readers in the hope that it may induce something of the kind to be attempted here. If we could found a summer refuge of this sort at Sorrento, Queenscliffe, or on Phillip Island, and remove to it, under suitable superintendence, two or three hundred young children from the unhealthiest quarters of this city and its suburbs, it would be a beneficial movement, not merely in a sanitary, but in a moral and social point of view, because the substitution of healthful and beautiful, for squalid and ugly surroundings, would tell advantageously upon the minds and future characters of the recipients of the change."

R E V I E W S.


The advertisement to this, the third volume of these valuable reports, commences by stating that they "will no longer be annual, but will appear at such times as the accumulation of
important materials may render advisable." Later information, however, is to the effect that it is not probable they will be continued at all. At this we are in no degree surprised; not because the reports have not been of a highly interesting character, but that the cost of getting together the materials for such a work, and the labour, especially in the matter of correspondence, so great, that none but a very large sale would reimburse the editor. It is easy to say we regret their discontinuance; everyone can say that, but we say more, it is not creditable to the profession that such a labourer as Dr. Dobell should not have found it profitable enough to encourage him to go on with the work. For it has steadily improved each volume, and it may be safely said that such a body of similar information could not be found together anywhere else. Turn wherever you will, you will light upon something practically interesting. And the arrangement of the work is such as to invite study. It is a book you may read through, and it is also one you may take up with profit for half-an-hour's reading. It is not heavy reading. You can extract information from it without laborious effort. And it is suggestive too. No thoughtful practitioner can take it up without finding something which sets him thinking. And all this, apart from the broader view it presents in the way of history, it mirrors the knowledge of the time in an important branch of medical science, and pictures the investigation going on in parts of the world remote from us. It thus prompts an emulative spirit, and cannot therefore but aid in furthering the progress of inquiry in connection with thoracic diseases. We repeat, therefore, that it is something to be deplored that such a series of interesting records should have been brought to an end at the third volume, or even that it should be issued fitfully and fragmentarily.

*Atlas of Diseases of the Skin.* By Balmanno Squire, M.B.
London, 1878.

The author says that, "In publishing this atlas, he has attempted an innovation which he believes will be a convenience. He has departed a little from the tradition which has hitherto ruled the production of atlases of cutaneous disease, namely, by depicting the disease of larger size than is usual, while he has curtailed the dimensions of the paper on which the disease is drawn. . . . Then, as to the other matter, he believes that the chief reason why many practitioners hesitate to possess themselves of atlases of this kind, which are of unquestionable service in their way, is that they feel they would scarcely know where to put the atlas when they had got it. Most atlases are of too capacious dimensions to go on a book-shelf, and many are even too large to go into any ordinary drawer; they must either be left lying about, or else some special receptacle must be constructed for them. . . . It is not necessary that a large margin should be provided for each plate, nor is it essential that a considerable portion of the
body beyond the area affected by the disease should be included in the drawing."

Of the drawings we can speak in the most favourable terms. They are graphic, expressive, and therefore instructive, and being arranged in the compact form of an ordinary book they are necessarily convenient. Of the text, it is singularly clear, plain and understandable. It is a description which anyone may comprehend. It does not even require any preliminary knowledge to understand these descriptions. They are divested as far as possible of all technical complications, and in the treatment recommended there is quite a fascinating simplicity. Mr. Squire, in short, gives to dermatology an attractiveness which its essentially repulsive character would hardly suggest. The illustrations to such a work of necessity make it an expensive one, and the price, ten and sixpence a part, seems high considering the facilities there are now in the direction of chromo-lithography. This large cost will no doubt limit the sale of the work. But to those to whom price is not an object, Mr. Squires' "Atlas of Diseases of the Skin" will prove an irresistible temptation to purchase.

LOCAL TOPICS.

The Contagious Diseases Bill was passed through its final stages in the Legislative Council on November 28th, with amendments, which were subsequently agreed to in the Assembly.

A Gazette notice of November 6 orders that the s.s. Hankow shall be placed in quarantine, in consequence of the occurrence of small-pox on board during the voyage from England.

Dr. James Cox, of Williamstown, has been appointed assistant surgeon in the Victorian Naval Reserve.

The following vaccinators have been appointed:—Mr. George Wakefield, for Kerang, vice Dr. C. E. Gay, resigned; Dr. Colquhoun, for the district of Clunes, vice Dr. W. Thomas, resigned.

The annual meeting of the Microscopical Society of Victoria was held at 117 Collins-street east on October 31. The president, Mr. Ralph, was in the chair, and he delivered an address dealing with the work of the society during the past year. He stated that a number of active members had joined, and that the society was in a prosperous condition. An election of office-bearers then took place. Mr. Ralph, Mr. Robertson, and Mr. J. R. Y. Goldstein were re-elected president, treasurer, and secretary, respectively; and Mr. Allen and Mr. Mortimer were elected members of committee.

The Council of the Pharmaceutical Society held its ordinary monthly meeting at the Royal Society's hall, on November 1, Mr. C. R. Blackett, the president, occupying the chair. Discussion took place in reference to an application to be made to the Government for a building site whereon to erect a school of pharmacy and laboratory, and a committee was appointed to wait on the Minister of Lands on the subject. The following members were elected:—Messrs. A. A. Rigney, Sale; W. H. Greeves, Woodend; Thomas Hopper, Carngham; A. L. St. Kruger, Horsham; and C. C. Simpson, Queenscliff. Twelve new members were nominated. The committee appointed to superintend the arrangements for the conversazione reported that a large number of objects of interest had been promised.

A presentation was made in the Shire Hall, Coburg, on October 31, by Mr. G. O. Duncan, on behalf of the officers and warders of the Penal establishment, Coburg, to Dr. James Reed, who was retiring from the service, of a gold watch and chain suitably inscribed. Dr. Reed said he felt flattered at the presentation. For the last 16 years he had been accustomed to meet with the donors, and the gold watch would always call to his mind the happy days he spent in Coburg.

The Minister of Lands was waited upon on November 20 by a deputation from the Pharmaceutical Society of Victoria, requesting the grant of a block of land, situated near the water-tank on Eastern Hill. Mr. Zox, Mr. Bosisto, Mr. Kernot, and Mr. Dixon, M.L.A.'s, pointed out that the Society was a large and very useful one, and that they contemplated erecting a building at a cost of £1000 on this site if it were granted to them. Mr. Longmore was desirous of knowing how the Society proposed to become a public benefit. Mr. Dixon replied that the Society was a public institution, carried on for the public benefit, and as much entitled to Government assistance as many societies that had received it. Mr. Longmore then expressed the opinion that they should not ask for such a fine site for so small a building as could be constructed for £1000. Mr. Zox remarked that the Medical Society had erected a hall worth only £800. Mr. Longmore admitted that, but said that it was a disgrace to the hill, and ought to be pulled down, as it seemed a pity to allow such a miserable little building to be left on such a site. However, he would not bind himself to any particular promise, but would ask the Society to send in an application, and he would see whether anything could be done.

A New Zealand paper of October 26 had the following:—"New South Wales has now a lady medical practitioner, Miss Ellen Curling, daughter of an English physician, and the holder of a certificate of competency from the Ladies' Medical College, having commenced practice for diseases of women and children in Parramatta." But the New Zealand paper does not state that the Ladies' Medical College certificate is not a qualification which the Medical Board of New South Wales will recognise.
NOTICES TO CORRESPONDENTS.

Communications have been received from Baron von Mueller, Mr. Ralph, Messrs. Smith, Elder and Co., Mr. Verner, Mr. T. Wellfield.

The following publications have been received:—The Lancet for August 24, September 7, 14; The British Medical Journal for August 24, 31, September 7, 14; The Medical Press and Circular for August 28, September 4, 11; The Students' Journal for August 31, September 14; The Glasgow Medical Journal for September; The London Medical Record for September 15; Trübner's American and Oriental Literary Record for August; The New York Medical Journal for August and September; Medical Communications of the Massachusetts Medical Society, No. 4, 1878; Proceedings of the Medical Society of the County of Kings for September; The Pacific Medical and Surgical Journal for September; The New York Medical Record for August 31, September 7, 14, 21; What Kills Our Babies: by C. D. Hunter, M.B., &c.; The Chemist and Druggist, with Australasian Supplement, for November; The Victorian Year Book for 1877-8.