

Reports and memoranda re organisation of Army Medical School, with printed prospectus

Publication/Creation

1857-1861

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Somewhat to
explain the
position of the
Professors of Medicine
& Surgery in the
Universities

Private
Papers connected
with

Any Medical School

Papership of Military
Surgeons. Army Medical School

Papers commencing from
Sept^r 10 59 —
—

435	390	370	420	423	340	450
430	350	305	305	305	340	240
360	250	163	175	215	200	110
<u>95</u>	<u>100</u>	<u>100</u>	<u>95</u>	<u>100</u>	<u>100</u>	<u>100</u>
1320	1090	930	995	1043	990	900
225	400	395	410	420	305	215
215	315	315	295	255	295	205
173	113	240	187	141	104	79
<u>175</u>	<u>90</u>	<u>100</u>	<u>100</u>	<u>00</u>	<u>05</u>	<u>05</u>
600	926	1050	962	096	709	659

*Professorship of Military
Surgery - Army Medical School*

*Papers commencing from
Sept 1859*

415 360 203 100 1070 2563 3641	475 411 335 100 1321 2406 3007	410 370 290 100 1170 2153 3323	360 350 191 100 1001 2134 3135	400 355 160 100 1015 1906 2921	395 330 345 100 1170 1095 3065	410 376 190 95 1071 1092 2963
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305 305 166 100 1036 1003 2919	300 345 225 100 1050 1060 2910	390 370 156 100 1026 1001 2017	445 310 230 95 1000 1767 2047	333 310 165 95 903 1134 2637	323 345 107 65 920 1676 2596
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300 320 170 05 055 1653 2600	265 335 124 70 794 11649 2443	435 360 205 1000 1630 2726	320 240 100 05 745 1612 2357	260 295 255 95 905 1600 2513
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240 290 01 90 701 1603 2304	245 260 152 100 757 11570 2327	315 305 115 05 020 1556 2376	395 330 200 95 1020 1526 2546	165 290 19 100 574 1523 2096	295 265 90 100 750 11510 2260
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393 260 175 90 010 1407 2405	310 225 52 05 672 1400 2152	330 200 123 00 013 1359 2172	245 200 66 75 506 1193 1779	105 260 01 100 566 1190 1756
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Medicine

Sent to Sir James Clark Dec: 2

LP 13/1

The Purpose of Medicine ~~will consist~~ consist in
giving instruction partly by clinical instruction
& partly by systematic lectures on certain diseases.

The clinical instruction will be his
chief duty & he will be expected not only
to ^{give instruction} examine the students at the bedside &
~~to~~ at to give clinical lectures
especially on the diseases which soldiers
are most liable, but also to examine
the proficiency of the students & to enter cases to them
in order that he may estimate & correct
their method of treatment.

The systematic lectures will
include a discussion on the diseases
of camps & armies, on those diseases
of the tropics & English colonies which
are not common in this country, &
on the geographical distribution of diseases.
The exact number of lectures cannot be at
present fixed but it is supposed that two

clinical lectures a ¹⁰²² instruction equivalent
to a clinical lectures, and & systematic
lectures in each week, will be sufficient, to

Wm. J. Clark
Dec. 1857.

Memoranda for Dr. Gibson.

LP 13/2

1 Lectures at Chatham.

The Regulations of the school order that each Candidate shall be here 6 months & that the courses of lectures shall not be less than 4 months.

Mr. Sidney Herbert was spoken to on the subject of leave for the Professors as it was thought that after 8 months lecturing and 2 months examination, ~~and~~ they would require at least 2 months ^{rest}, and it was also considered well that time should be given them to visit other countries if they thought fit, ^{from time to time} and to see what ^{are} the arrangements in the continental ^{universities}. Mr. Herbert stated that he would bring this question to the Senate.

If on consideration the Senate determine to commend 2 months leave annually, ~~to~~ the Professors have agreed to ask for August and September in each year.

If this arrangement is made, the following will necessarily be the periods of the lectures

1st course - October Nov^r Dec^r Jan^r -
February - Examⁿ & Reports
2nd course - March - April May June
July - Examⁿ & Reports -
Leave - August & Sept^r.

The first examination of the candidates must be brought into unison with this scheme.

The examⁿ of the Candidates for the Indian Service has been held twice yearly in January & July and the plan has been found to work well. If the examⁿ for the Army could be held

Refers to
Professors
in Charge
of
Herbert

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Bursars

Memoranda for Dr. Gibson.

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I think that the business of the School will not admit of this except in the period of their ordinary leave

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in the same months

in the same months^{p. 2}, then the Candidates would be
ready to go to Chatham at the same time. ^{for each service?}

If the same Examiners act for both services
as in the last examⁿ, it will be necessary to
separate the Army and Indian Examinations
by 3 weeks if possible, in order to give time
to make the arrangements without confusion.

If this be done the following plan is
proposed

Examinations for the Army to commence on
the first Mondays in January and July.

Examinations for the Indian Service to
Commence on the 4th Mondays in January
and July.

The successful Candidates at each Examⁿ
to be ordered to be at Chatham on the
28th of February and the 30th of September
that an arrangement would give them a
little rest after the work of the first
examⁿ and might in part serve in lieu
of the 3 months leave to which the Indian
apt. Surgeons are entitled after they have
received their Commissions.

The Candidates will therefore be at Chatham as
follows.

1. March - April - May June - attending
lectures -
~~April~~ ^{July} - examined
~~May~~ ^{August} - waiting for commission &
removal.
2. October Nov. Dec. Jan - lectures
February examⁿ.
March - waiting for Commission

It may be a question whether August would not be a better month for the 2nd half yearly examⁿ than July. The medical session would be then completed, & the leave between the examⁿ & the going to Chatham would not be so long.

The only objection is that if the Examiners are London Hosp^l Physicians & Surgeons, as has been the case with the Indian Examⁿ, August is one of the months ^{some} ~~most~~ of them go out of town. This perhaps is not very material.

Under any circumstances it is thought very desirable that the candidates should not go to Chatham till just before the lectures commence. It is very necessary they should not get into idle habits.

If the leave of the Examiners be in July & August, and the lectures began in Sept^r & in February, the Examⁿ might be held in August & Dec^r.

This would equalize the leave between the examⁿ & the going to Chatham.

Memorandum 2.Hospital duties at Int P.R.

All the Professors think it is advisable not to lay upon the Professors of Medicine and Surgery any work which may at all interfere with the most efficient discharge of their professional work. If the Professors are in charge of the Med! & Surg! Divisions will they not have a great deal of routine work & many returns to make up? Some provision should be made to avoid this, and also to give the Professors their 2 months leave.

Two schemes present themselves.

1. The Professors not to be in charge, but to have clinical ward with power to choose patients from the general ward and to keep them as long as they like. During the 2 months leave the clinical ward to be attended by the Surgeon-in charge of the Division.

2. The Professors to have charge but to be assisted by a Surgeon who should be really responsible for the routine work & should be in sole charge during the 2 months leave of absence.

Army Med^l School

1860²

Arrangements for Time of
Sessions — leave of absence of
Professors &c —

(Mem^m sent to Sir J. Gibson)

Memorandum. 3.

Proposed order for the business of the Senate.

The Director General to be President - in his absence
^{the senior} member of the Senate to be in the Chair.

The Director General to summon the Senate at such
 times as he may think fit.

One of the members of the Senate to be appointed Secretary
 and to keep the minutes.

Order of business at the meetings.

1. Minutes of last meeting to be read & confirmed.
2. Correspondence, directions &c to be read.
3. Reports of the Professor or of Committees to be read and received.
4. Motions proposed.
5. Other business.

Army Med. School
Order of Business at
^{the 2nd} Meetings of Senate
at Chatham 1860?

Memorandum 3.

Proposed order in which the business of the Senate should be conducted.

(The Director General to be President, when present, in his absence a President to be chosen).

1. Minutes of last meeting to be read and confirmed.
2. Letters received to be read. Directions &c, from the Secretary of State to be read.
3. Reports of Committees or of Papers to be read, and received.
4. Motions proposed.

Am. Mus. J.

Vol. 1, No. 1

1859

1859

Renouveau / 4 N° 1

LP13/3

Proposition of Health at
School

Dates of Courses

Report of Progress

Sup. Nightingale
exercises.

ORGANISATION

OF THE

ARMY MEDICAL SCHOOL

ARMY MEDICAL EXAMINING BOARD.

To consist of not fewer than four Members. Physicians and Surgeons in civil life, qualified for the office by their position as Teachers or otherwise.

REQUIREMENTS OF CANDIDATES FOR THE MEDICAL DEPARTMENT OF THE ARMY.*

They will be required to produce the following documents, as qualifications for examination, ~~before~~ the Army Medical Examining Board.

1. A Certificate of Baptism, or other proof of not being under twenty-one nor over twenty-six years of age.

2. A Diploma in Surgery, and a License in Medicine, from ~~some body~~ ^{competent to grant such License; or, a Degree in Medicine, the qualifications for which include a full examination in Surgery.} ~~or bodies~~ ^{equivalent to that in Medicine.}

3. The Candidates will also be required to produce Certificates of having attended the following courses of Practical Instruction:—

- (a) A Course of Materia Medica and a Course of Practical Pharmacy.
- (b) A Course of Practical Chemistry, in which the Pupil has been required to conduct Chemical Analysis himself, during a period of not less than three months.
- (c) A Course of Practical Anatomy, in which the Pupil has himself dissected the whole body once at least.
- (d) A Course of Clinical Surgery in an accredited Hospital.
- (e) A Clinical Course of Ophthalmic Surgery.
- (f) A Course of Clinical Medicine in an accredited Hospital, in which instruction is given at the bedside, and by Clinical Lectures.

4. A Certificate of having conducted at least six Labours.

5. A testimonial also will be required of his acquaintance with one living language besides his own.

These documents are to be deposited with the Director-General of the Army Medical Department a week, at least, before the period fixed for examination.

Due notice will be given of the time and place of examination.

* In drawing up these Regulations we have adopted, with some slight modifications, those of the Medical Examining Board of the East India Company. The Regulations of that Board have proved very successful in raising the acquirements of the Candidates on each successive examination; and have also produced a favourable effect on the Schools, by directing the attention of both Teachers and Pupils to the importance of devoting more time to the practical part of Medical Education.

SUBJECTS OF EXAMINATION.

1. Natural History,* Botany, Zoology, Geology, and Meteorology.
2. Anatomy, Physiology, and Comparative Anatomy.
3. Surgery, Surgical operations on the dead body, application of splints, bandages, &c.
4. Medicine, including Therapeutics, Pathology, Hygiene, and Medical Chemistry.

The Examinations will be competitive; but a minimum of acquirement will be fixed, below which no Candidate will be permitted to pass.

They will be conducted by means of printed questions and written answers; by object examinations; by experiments; and by practical examination of Patients in Medicine and Surgery; by dissections, and operations on the dead body; and by *visu voce* interrogations.[†]

The names of the successful Candidates, classified according to their merit, as shown by the result of the examinations, will be delivered to the Director-General of the Army Medical Department. The Candidates will then be sent as Probationers to an Army Medical School for a fixed period, for the purpose of acquiring a knowledge of the specialties of the Army Medical Service.

If at the end of their Army Medical School Course they give satisfactory evidence that they are qualified for their duties as Army Medical Officers, they will be eligible for commissions as Assistant-Surgeons.

Before they can be considered eligible, the Probationers will be required to pass an examination on the subjects taught in the School. This examination will be conducted by the Professors of the School, by means of written questions and answers, by demonstrations, operations, experiments, and the like. The Director-General, or any Army or Civil Medical Officer, deputed by him, may be present, and take part in the examination if the former deem it desirable.

* The following treatises give all the information that is required of Candidates on these subjects:—

- (a) Botany: Lintley's or Hensley's "Elements of Botany."
- (b) Zoology: "Carpenter's Zoology," edited by W. S. Dallas, F.L.S.
- (c) Lyall's "Elements of Geology."
- (d) Comparative Anatomy: "Outlines of the Structure and Functions of the Animal Kingdom," by Rymer Jones; or "Cours Élémentaire d'Histoire Naturelle," par Milne Edwards.

(e) Meteorology: Kämpfer's "Treatise on Meteorology."

† It has been found occasionally that Candidates for Medical Appointments have shown a competent knowledge of their profession, and have yet displayed great ignorance of their own language, so as to be unable to draw up, in good English, the detailed reports which are required of Army Medical Officers. It must be understood that such an imperfect knowledge of the English language will of itself constitute a cause of rejection.

ORGANIZATION OF THE ARMY MEDICAL SCHOOL.

The Medical Staff will consist of the following Officers, viz. :—

Five Professors—

- A Professor of Military Hygiene.
- A Professor of Clinical and Military Medicine.
- A Professor of Clinical and Military Surgery.
- A Professor of Pathology, of Morbid Anatomy, and Natural History.
- A Professor of Applied Chemistry.

Each Professor may appoint a Student to act as assistant in any subordinate details of his Course.

The Lectures and Practical Instructions to be delivered at the School will be directed to the specialties of the Army Medical Service.

The subjects of the following Courses of Lectures will be arranged in such order and manner as the Senate may from time to time decide.

MILITARY HYGIENE.

The Course of Lectures and Instructions in Hygiene should be directed to impress forcibly on the mind of the Student the whole principles on which the prevention of disease is based, not only in their scientific but in their practical aspect, and from thence to follow out the application of those principles to the preservation of the health of troops in Barracks, Hospitals, Garrisons, Stations, Camps, and Marches, both by practical instruction in the problems of Army hygiene, and by reference to maps, diagrams, models, instruments, and other methods of illustration.

PART I.

Principles of Hygiene.

Hygiene, its nature, importance, historical notices of, objects as regards civil populations and armies. Literature. Legislation.

General statement of physiological laws relating to health and disease. Influence of age, sex, temperament. Influence of trades and occupations. Longevity.

External conditions upon which health depends, considered in relation to individuals and communities. Comparative healthiness of different races. Physical and mental qualities of different races, influencing their fitness for military service.

Examination of external conditions and the effect of these on health and life. General sketch of the meteorology of the different zones. Effect of temperature on health and longevity: and of sun heat, season, moisture, droughts, rains, winds, calms, storms, day, night, light, darkness, electricity, apparent lunar influence in tropical climates. Sun-stroke, snow blindness, night blindness.

Meteorology. Manner of making and keeping meteorological observations. Barometer. Sun thermometer. Maximum and minimum thermometer.

HYGIENE.
Its nature and importance.
Physiological laws relating to health.

Conditions on which health depends.

External conditions as to climate, &c.

METEOROLOGY.

Hygiene is an auxiliary science, not a science in itself. It is a science which is of great importance in the study of medicine, and which is of great importance in the study of the human body, and which is of great importance in the study of the human mind.

Wet and dry bulb. Rain gauge. Electrometer. Anemometer. Clouds. Snow. Hail. Ozone papers. Reduction of observations. Description of climates. Effect of different climates on health. Influence of light and of sun radiation on health. Beneficial effect, or the reverse, of change of climate, and precautions required. Acclimatization.

PHYSICAL GEOGRAPHY.

Positions occupied by the human race on the Earth's surface. Physical Geography. General sketch of the Earth's surface. Land. Water. Mountains. Hills. Plains. Plateaux. Deserts. Valleys. The sea. Rivers. Lakes. Marshes and marshy ground. Vegetation. Forests. Jungles. Brushwood. General geological sketches of the Earth's surface. Stratification. Formations. Surface soils. Subsoils. Natural drainage. Proportions of land and water.

MEDICAL TOPOGRAPHY.

Physical geography and medical topography of the British islands, colonies, and possessions. Medical topography of countries where military operations have been carried on. Geographical distribution of disease and mortality over the surface of the Earth in relation to the physical geography of different countries. Sketch of external conditions influencing the geographical distribution of disease. Climate. Elevation. Marsh and subsoil miasm; miasm from river and lake banks, and stagnant waters. Salt marshes. Salt and fresh water marshes. Sea coasts. Defective natural drainage, irrigation, heavy rains, damp and stagnant air, and mists in plains, valleys, hollows, forests, jungles, rapid changes of temperature, decomposing organic matter, &c. Effect on health of marsh water, river water, stagnant waters, shallow and deep well waters, brackish waters, mineral waters. Diseases produced or aggravated by the use of water containing organic matter in a state of putrefaction.

Influence of elevation above or below the sea-level on health. Beneficial effects of change of elevation. Sanitaria. Rules for selecting them. Rules for selecting stations.

Advantages of mountain climates in tropical countries.

Medical topography of mountain ranges in our foreign possessions, including the history of mountain climates. Advantages enjoyed by such climates in our intertropical possessions. Necessity of establishing the European troops in the hill ranges of our intertropical possessions. Advantages of solitary mountains. Meteorology of mountain ranges, specifying the different phenomena and their influences on health at different degrees of elevation.

Causes of the greater healthiness of certain geological formations than of others.

Effects of miasmata from putrescent animal matter.

Effect of emanations from putrescent animal matter on health. Emanations from excreta: from the skin: from the lungs. Illustrations of the production of speedy death by such emanations; also plague, gaol fever, typhus, &c.

Diseases arising from marsh miasm.

Diseases arising from marsh miasm, intermittent, remittent, and tropical bilious fevers, yellow fever, &c.

Diseases from putrescent organic matter.

Diseases aggravated by emanations from putrescent animal matter. Plague, and fevers of the continued type. Typhus, Cholera, Diarrhoea, and Dysentery, Ophthalmia, Phthisis, Carbuncle, "Pastule Maligne."

Sources of putrescent organic effluvia.

Sources of putrescent organic effluvia. Overcrowding of the population on a given area. Illustrative examples of this in civil life and in the Army.

Surface overcrowding.

Relation of disease and mortality to surface overcrowding. Effect during epidemics, in increasing their intensity. Beneficial effect of spreading the population during epidemics.

Defective drainage.

Influence of defective surface and subsoil drainage, in predisposing to

epidemics, with illustrations. Similar illustrations from defective or deficient drainage in towns and buildings. Fatal effects of sewer air diffused through the atmosphere of towns and buildings.

Miasmata from nuisances, unwholesome manufactories, cesspools, sewers, accumulations of decaying refuse, unburied carcasses, and offal, dead bodies, and overcharged grave-yards. Defective burial of the dead. Burial in churches or under habitations. Illustrations of their influence on health, and in predisposing to epidemic disease.

Influence of overcrowding in cubic space in the production of disease, especially during epidemic seasons. Amount of cubic space and superficial area requisite for health in barracks, huts, tents, hospitals, and ships. Principles on which the amount of cubic space should be determined.

Ventilation. Sources of atmospheric impurity in unventilated dwellings from respiration, carbonic acid, animal exhalations from the skin and lungs. Effluvia from foundations of buildings: from fires, lights, cooking, stables, under or near buildings. Inquiry as to their effects, especially during epidemic seasons, with illustrative examples, taken from the Army and from civil life. What constitutes good ventilation. Discussion as to the cubic quantity of air required. Simple methods of ventilation in use, with models and plans. Natural ventilation, artificial ventilation, their relative advantages.

Relation of diet to health. Dietetic substances, animal and vegetable. General description of classes of animals from which dietetic substances are derived. Geographical distribution of animals. Classes of animals fit for food to be obtained in different countries. Comparative nutritive value of beef, mutton, pork, veal, fish: when fresh, dried, salted, smoked, also of cheese, milk, eggs. Chemical analysis of different kinds of animal food. Marks of health and disease in animals. Signs of fitness or unfitness for food. Sanitary precautions to be adopted on board transports for animals. Diseases, deterioration of flesh and loss of animals arising from neglect of these precautions, and probable injury to the troops in consequence. Signs of wholesome and unwholesome meat. Diseases arising from the use of unwholesome or badly prepared flesh or fish.

Cooking, stewing, boiling, roasting, frying, baking. Benefits to health of change in the mode of preparing food. Grains used for food. Their geographical distribution. Wheat, oats, barley, maize, rye, rice, their generic and specific characters. Chemical composition. Comparative nutritive value. Signs of wholesome and unwholesome grain. Diseases arising from the use of unwholesome grains. Ergotism. Signs of good, bad, and adulterated flour. Microscopic characters. Deterioration by insects.

Preparation of grains for food. Biscuit. Bread. Cake. Preparation of Baking. Its constituents. Its nutritive value. Under what circumstances it may become injurious to health. Bread, its constituents and manner of preparation. Yeast and its substitutes. Characters of wholesome bread. Methods of preparing maize flour as food.

Bulbs, tubers, roots used as food. Potatoes, carrots, turnips, onions, Root. leeks, &c. Chemical composition. Nutritive qualities. Preparation for use. Distinguishing characters of wholesome and poisonous roots.

Green vegetables. Their geographical distribution. Dried vegetables. Vegetables. Constituents. Mode of preparation and preservation. Peas, beans, haricots. Nutritive value. Chemical constitution. Mode of cooking.

Condiments.

Condiments. Mustard, pepper, salt. Their use and abuse.

DRINKS.

Drinks. Water. Quantity required for drink, cooking, washing. Physical tests of pure water. Rain water, its composition and qualities. Chemical substances dissolved in water. Hardness and softness, their tests and nomenclature. Saline ingredients. Calcareous, organic, and metallic ingredients. Their effects on the purity and wholesomeness of water. Sources of water. Rain, springs, streams, rivers, lakes, wells, ponds, marshes.

Disease from impure water.

Diseases produced or aggravated by impure water. Fever, Cholera, Diarrhoea, Dysentery, Dracunculus, &c. Mode of operation of impure water in producing disease.

Storing and purifying water, &c.

Methods of purifying, collecting, storing, and distributing water. Subsidence, filtration, boiling, distillation chemical purification. Collecting by superficial drains, by earthenware, metal, or wooden pipes. Necessity of guarding water sources and wells. Covering reservoirs. Precautions in distributing water to prevent pollution. Supply of water for animals.

Tea, Coffee, &c.

Tea, coffee, cocoa. Their chemical composition, dietetic properties, utility in repairing waste.

Wines.

Wines. Kinds, qualities, geographical distribution. Wines obtainable in different countries. Their healthiness or unhealthiness. Adulterations, and the manner of detecting them.

Spirits.

Spirits. Rum, brandy, whisky, arrack. Adulterations, and the means of detecting them.

Malt Liquors.

Malt liquors. Their chemical and dietetic qualities. Vinegar, lime-juice, acids. Their proportions and uses in drink. Adulterations.

Clothing. Composition, &c.

Clothing. Its nature and composition. Weight, material, colour. Conducting or non-conducting power for heat. Also the fitting of clothes to allow free play to the muscles and internal organs.

Clothing for different countries, climates, and seasons. Its essential parts for health, and their composition. Waterproof materials. Stock. Head-dress. Boots and shoes, their kind and quality. Precautions in manufacture required to prevent foot lameness. Clothing for duties with reference to a high day and low night temperature.

General Resumé.

General resumé of the conditions necessary to health already discussed. Limits within which these conditions may be imperfectly fulfilled without producing disease.

Operation of neglect of Hygiene in causing disease.

Operation of neglect of hygiene on the organism in causing disease, or in predisposing to it, in different climates, ages, sexes, temperaments, and civilizations.

Great differences in the amount of disease and mortality existing over the globe.

Statistical facts to prove this. Differences among town and country populations in the same country.

VITAL STATISTICS.

Vital statistics. Their foundation. Method of collecting facts. Structure of tables and diagrams.

Tables exhibiting the leading facts of comparative vital statistics referring to the health of countries, districts, cities, and towns, sex, age, occupation.

Examination into the causes of mortality.

Diseases which influence mortality to the greatest extent. Importance and necessity of a common nomenclature of diseases.

Explanation of the nomenclature. Importance also of one classification Nomenclature for the public service.

Prominence due to zymotic diseases in all classifications. Their importance in civilization. Their especial importance in armies.

Epidemiology. Importance of this branch of science. Laws of epidemics. Epidemiology. Localizing conditions of epidemics. Predisposing effects of season, bad and unwholesome food, deficient clothing misery.

Medieval epidemics. Plague, black death, sweating sickness. Account of the conditions under which these diseases desolated Europe and Asia. Facts as to predisposing conditions that have come down to us. Modern epidemics, plague, cholera, yellow-fever, typhus, small-pox.

Inoculation, vaccination, re-vaccination. Transmissibility of disease. Illustrative examples of the mitigation and extirpation of epidemic diseases by sanitary measures. Advantage of treating zymotic diseases, especially cholera, in their early stages.

Sanitary measures. Earliest records of their use for preserving health and preventing epidemics among Egyptians, Hebrews, Greeks, Romans, &c. Sanitary measures and legislation.

Sanitary legislation. Authorities, Officers of Health, and Inspectors, their duties and usefulness. General organization of sanitary police in towns. Detailed account of recent sanitary improvements introduced into towns, buildings, and country districts. Drainage, its object and principles. Formation and construction of sewers and drains. Trapping, ventilation, flushing of sewers and drains. Various forms of soil-pans, water latrines, urinals. Cleansing and preventing nuisances. Paving. Its great utility as a means of preventing disease. Limewashing of houses. Its *modus operandi* and beneficial effects in checking epidemic disease. Public baths and wash-houses. Their arrangement and construction.

Instances of improved health from sanitary works. Model lodging-houses. Improved health. Requisites for healthy buildings.

Hygiene as applied to the treatment of disease.

The construction of Hospitals. Selection of sites, with reference to aspect, climate, and freedom from miasmata. Pure air and pure water the prime elements in all Hospitals. Comparative advantages and disadvantages of different plans of construction. Number of sick under a single roof. Advantage of constructing Hospitals in separate pavilions. Best dimensions, proportions, cubic contents, and number of sick in wards for health and facility of administration. Position of water-closets, sinks, urinals, baths, and sanitary precautions requisite in respect to them. Attendants, rooms, and stores. Lighting wards. Beneficial influence of light on disease. Amount of window space in relation to cubic contents of wards. Position of windows with respect to the form and proportions of wards. Position of beds.

PART II.

Application of Hygiene to Armies.

Military Vital Statistics. Army ages. Mortality due to Army ages in civil life. Mortality in the Army. Inquiry as to its amount. Sanitary condition of civil population out of which the Army is selected. Process of selection, and proportion of recruits rejected, and for what diseases. Effect of this on the vital statistics of the Army and of civil life. Invaliding, its

MILITARY VITAL STATISTICS

amount at different ages. Causes of invaliding. Deaths amongst invalids. Actual Army mortality, and comparison with civil life.

Mortality of Foreign Armies. Mortality of different foreign armies. Comparison with that of the British Army.

Mortality in different Arms. Mortality in different branches and arms of the service, Household Troops, Foot Guards, Cavalry of the Line, Infantry of the Line, Artillery, Engineers, Sappers and Miners, Land Transport, Colonial Corps, black and white troops. Comparative mortality of troops on home and foreign service.

Comparative Mortality in different Colonies and Possessions—India, Ceylon, Africa, Cape, West Indies, Mediterranean, Canada, Australia. Mortality in War, Peninsula, Walcheren, Scutari, Crimea, Napoleon's Russian Campaign.

Causes of high Mortality in Armies, Zymotic Diseases. Examination as to the diseases which occasion the high rate of Army mortality. Zymotic diseases. Effect of zymotic diseases on the mortality of armies as compared with diseases of other classes.

Diseases of different Colonies and Stations. Diseases incident to different Colonies and Stations—India, West Indies, Ceylon, Cape, Mediterranean, Bermuda, Canada.

ARMY EPIDEMICS. Historical sketch of Army epidemics. Yellow fever, Army typhus, remittents, intermittents, continued fevers, dysentery, plague, cholera diarrhoea, scorbutus, ophthalmia.

Local and personal conditions with which they are usually connected. Conditions under which any epidemic may be anticipated. Epidemic influence. Signs of its approach. Effect on other diseases.

Yellow Fever. Yellow Fever. Temperature and latitude under which it exists. Yellow fever zones. Account of Army yellow fever epidemics. Barbadoes, Jamaica, Gibraltar, Bermuda.

Their history, origin, mode of propagation. Statistics. Sanitary defects in Stations, Barracks, Garrisons, and Hospitals with which they have been connected (Fergusson, Bone, Gilchrist, &c.). Loss to the Army from them. Sanitary improvements already carried out to diminish their intensity. What preventive measures are further required.

Army Typhus. Army Typhus. Nature of the disease. Causes. Influence of sanitary defects in predisposing to it, with illustrations. Sanitary and other prophylactic measures required to prevent it.

Remittent Fevers. Remittent Fevers. Their relation to yellow fever. Their origin. Local favouring conditions. Personal predisposing causes. Parts of the globe where they occur. Facts connected with their occurrence. Influence of marsh malaria and decomposing vegetable matter under high temperature. Sanitary and other prophylactic measures required for their mitigation.

Intermittents. Intermittents. Influence of malaria, extremes of heat and cold, exposure to night air, &c. Prophylactic and sanitary measures required for their mitigation.

Continued Fevers. Continued Fevers, their local favouring conditions and prophylaxis. Influence of damp, overcrowding, defective ventilation.

Dysentery. Dysentery. Types of the disease. Predisposing causes from filthy camps, bad water, monotonous or unwholesome diet, exposure to extremes of heat and cold, night air, &c. Sanitary and prophylactic measures required.

Plague. Plague. Instances of its appearance in armies, and the conditions under which it has shown itself. Sanitary state of towns and districts visited by plague. Prophylactic measures.

Cholera. Cholera. First appearance of Asiatic cholera in 1817. History, progress. Subsequent epidemics in India, Europe, America. Local and personal con-

ditions under which cholera is most fatal. Bad water, overcrowding, defective ventilation, malaria, fatigue, filth, drunkenness, &c. Premonitory diarrhoea.

Precautions against Cholera. Evacuating affected Barracks and Hospitals. Camping out. Shifting camps, reducing overcrowding, ventilating, lime-washing, cleansing, spreading the men on march. Avoiding bad camping ground on march. Spreading the troops. Short marches. Avoiding fatigue.

Regulation of latrines.

Great importance of inspection for the discovery of premonitory diarrhoea.

Scorbutus. Importance in armies. Causes, influence of salt provisions, monotonous diet, want of vegetables, damp, exposure, foul air, other concurrent causes. Prevention, rations, vegetables, and vegetable acids, lime-juice, lemon-juice, vinegar, acid fruits, vegetables. General attention to hygiene.

Ophthalmia. Its great importance in armies. Predisposing conditions, Ophthalmia.

sunlight, dryness of air, dust, defective ventilation and overcrowding, want of personal cleanliness, bad habits, intentional communication of the disease. Preventive measures against ophthalmia.

Phthisis pulmonalis. Its predisposing causes in barracks. Necessary Phthisis Pulmonalis. sanitary measures. Farunculus, sun-stroke, frost-bite. Foot lameness, its causes, importance of prevention.

Prophylaxis of syphilis.

Enlistment. Examination of recruits. Signs of health, of disease, of constitutional defects. General appearance, height, weight, development of chest, abdomen, spine, muscular development. Spirometer. Dynamometer. Marks of medical or surgical treatment. Stethoscopic examination. Pulse, heart, tongue. Eye, hearing, voice, form of feet and hands, skin, glands, marks of vaccination, &c.

Defects rendering recruits unfit for service. Feigned and simulated diseases. Explanation of instructions for examining recruits. The great importance of selecting only the best men for service, and the injury to the service of admitting weak and unhealthy men.

Training, drills, exercises, games, gymnastics, their nature, and importance in developing different sets of muscles, of respiration, walking, running, arms, &c. Gymnastic apparatus. Classification of exercises. Injurious gymnastic exercises and accidents that may arise from them. Precautions. Practical importance of gymnastics in improving health and increasing the agility and muscular power of the soldier.

Functions of the skin in preserving health. Personal cleanliness, washing, bathing, different kind of baths, bathing parades, hygienic rules and precautions in respect to bathing in different climates and seasons. Prevention of cutaneous diseases. Scabies. Prevention of diseases of scalp. Construction of lavatories, substitutes on field service. Washing of clothes on field service.

Barracks and stations. Selection of site for buildings as to selections in different climates. As to marshes, elevation, exposure, configuration of ground, natural drainage, nature of surface and subsoil, water-supply.

Structure of barracks. Foundations of buildings for warm climates. Drainage of site. Materials for building. Arrangement of rooms and staircases, to secure independent ventilation of every part of the building. Size and proportions of barrack rooms. Cubic space per man in different climates and seasons, and during epidemics. Means of ventilation and

Syphilis.
PRACTICE OF ARMY
HYGIENE
Enlistment.

Training Exercises.
Gymnastics.

Baths, &c.

Barracks.

warming. Amount of window space. Means of lighting. Limewashing. Materials for walls, ceilings, and floors. Cleansing floors, furniture, bedsteads, bedding, urinals. Latrines, their structure. Drainage. Drains not to pass under buildings, and why?

Hygiene of barracks.

Hygiene of barrack rooms. State of the air in unventilated barrack rooms at night. Ventilation during night. Chest diseases produced by neglect of night ventilation.

Methods of ventilation. Cleanliness. Objections to basement barrack rooms. Barrack kitchens, their structure for various kinds of cooking. Necessary utensils. Boilers. Soyer's stove. Open fire-places. Ovens. Gas ovens. Economy of fuel. Cavalry barracks. Special sanitary precautions regarding them. Position of stables. Arching of stables. Independent ventilation of stables. Cleansing. Drainage. Removal of manure.

Selection of buildings.

Selection of buildings to be occupied as barracks. Their position, neighbourhood, drainage, structure, cleansing, ventilating. Allotment of cubic space. Limewashing. Provision of latrines. Selection of quarters. Billeting of troops. Sanitary precautions and works required.

Garrisons.

Sanitary inspections and reports on barracks. Points to be examined into. Garrisons and stations. Choice of stations. Change of stations. General sanitary police. Drainage. Cleansing. Clearing away timber and vegetation, &c. Hygiene of buildings. Casemates, their construction. Their sanitary defects in want of light and ventilation. Special sanitary precautions required in regard to them, whether used as barracks or as hospitals. Occupied towns during war. Duties of Quartermaster-General's Department and of Medical Officers. Inspection of town, as to its vicinity, position, drainage, cleanliness, population. Water supply.

Sanitary Police.

Organization and duties of sanitary police. Selection of buildings for quarters and hospitals. Precautions against epidemic disease. Cleansing. Drainage. Removal of nuisances, &c.

Seaports in occupation. Special sanitary precautions in regard to them. Harbour police. Co-operation of military and naval authorities in preserving the health of seaports.

Hygiene of Hospitals.

Sanitary regulations and works for occupied towns and seaports. Selection of site for buildings. Exposure. Locality. Vicinity. Composition of surface and subsoil. Natural drainage. Plan of hospitals. Discussion as to advantages and disadvantages of different plans for sanitary and administrative objects. Great principle in hospital construction to break up the sick into small numbers under separate roofs. Number of flats. Size of wards for administration and salubrity. Number and position of windows. Windows should be on opposite sides of ward. No more than two rows of beds in a ward. Amount of light required in hospitals. Illustrations of good and bad hospital construction. Advantages of recent French improvements. Ventilation of hospitals. Various methods. Artificial, by extraction: by injection of air. Natural, by doors, windows, and fire-places. Best methods of natural ventilation. Their facility, their advantages in securing freshness of the air. Much larger amount of air than can be admitted by natural methods. Quantity of air requisite for sick. Usefulness of artificial ventilation in defective hospital construction. Hospital water-closets. Their structure and position and ventilation. Cubic space for sick in different climates. Distance of beds. Warming of hospitals. Advantages of open fire-places. Their great ventilating power.

Radiant heat best for warming, and why? Walls and floors of hospitals should be of impervious materials. Position of 'nurses' and orderlies' rooms. Ward furniture and bedding. Water supply of hospitals. Baths, cold, hot, vapour, shower, mediated. Their structure and positions with respect to wards. Hygienic uses. Kitchen. Best structure of hospital kitchens. Cooking. Diets. Diet tables. Analysis of diets. Explanation and use of diet tables.

Selection of buildings for temporary hospitals. Examination and selection of buildings for hospital purposes. Points requiring special inquiry. Position. Drainage. Ventilation. Cleanliness. Amount of accommodation. Adaptation of buildings. Improvements and works necessary to remove defects. Instances of disastrous results from sanitary neglects in hospital buildings.

Selection of buildings for temporary hospitals.

Preliminary inquiries before troops take the field as to physical geography. Medical topography. Climate. Supplies. Numbers, and habits, and diet of the population. Houses, &c. Water. Prevalent epidemics and diseases. Manner of conducting inquiries. Subjects of inquiry. Reports. Precautions founded on reports. Preliminary examination of country. Selection of camp sites. Marks of positions favourable or unfavourable to health. Examination of vicinity, of surface and subsoil, of drainage, woods, vegetation, products, waters, prevailing winds. Sanitary reports to Quartermaster-General on these points. Methods of improving positions by drainage, cutting down timber and brushwood, &c.

Hygiene of Camps.

Arrangement of camp. Order and distance of tents best adapted for health. Estimate of the number of men on a given area in different forms of camp. Importance of the question as regards health.

Arrangement of Camps.

Drainage of camp sites, on hillsides, slopes, and flats. Nature of drainage required in different inclinations of ground and in different soils. Construction, management, distance, and position of camp kitchens, slaughtering-places, latrines, manure depôts, stables, and burial grounds.

Drainage of Camps.

Camp Kitchens.

Huts. Materials for construction, stones, planks, pannels, wattles. Best form and dimensions. Preparation of ground. Drainage of site. Raising of foundations above surrounding levels. Utility of this precaution. Ventilation, and best methods of effecting it. Means of keeping huts cool in hot weather. Utility of limewash. Protecting hut sides during cold weather. Good and bad methods of doing so. Their influence on health. Dangers to health from excavated huts.

Tents. Preparation and drainage of sites. The importance of this to health. Methods of ventilating tents.

Tents.

Bivouacs, &c. Sanitary precautions required, as to ground, shelter, fires, food, clothing, &c.

Bivouacs, &c.

Field hospitals. Selection and drainage of site. Huts, preparation of sites, draining, ventilating, warming, limewashing. Marquees, means of ventilating. Flooring for huts, marquees, and tents. Boards, punned earth, stones, &c.

Field Hospitals.

Method of paving vicinity of tents and huts. Camp and hospital kitchens. Various forms of construction. Cooking utensils. Details of sanitary inspection of camps.

Sick transports and hospital ships. Their arrangements, sanitary precautions as to cleanliness and ventilation. Water supply.

Water supply of camps. Estimate of amount required for men and water.

animals. Examination of water sources—microscopic, chemical. Selection of sources. Plans and methods of supply in hilly countries and plains. Methods of purification of water, construction of filters, tanks, wells, &c. Arrangements for watering animals indispensable. Proper construction of watering troughs.

Rations. Sources of supply. Those of every country should be known. Composition of rations on physiological grounds, according to the supplies available. Changes in rations to prevent disease. Practical details of rations in conformity with the work, duties, climate, season, &c., to which the soldier is exposed.

Drinks. Catalogue of these in use in different countries. Their wholesomeness or unwholesomeness. Drinks best suited for soldiers in foreign countries and climates. Tests of their adulteration.

Canteens. Their regulation and good sanitary state necessary to health. Intemperance. Means of suppressing it in camps. Disease, mortality, and loss of efficiency arising from it.

Invaliding. Examination of invalids. Diseases and accidents influencing health and efficiency. Effect of invaliding on the strength of armies.

Burial grounds. Burial of the dead in armies. Position of burial grounds, their regulation. Practical instructions on hygiene. Examples of examination of recruits.

Troop and sick transport. Troop and sick transports. Requisites for health, ventilation, cleanliness, deodorising substances, pumping out bilge water. Cubic and superficial area required. Equipments. Sanitary duties of officers.

Exercises in the examination into the qualities of various articles of food, drink, and clothing.

Exercises in the examination into the sanitary condition of country and town districts, buildings, barracks, hospitals, &c., for the purpose of pointing out defects and their remedies.

Exercises in making sanitary inspections and drawing up sanitary reports by Medical Officers.

Exercises on the sanitary regulations in the Army, explanation of their objects, and their application to the prevention of disease.

Exercises on the means of mitigating or preventing epidemic disease in armies.

Exercises in keeping statistical accounts of disease and mortality, with special reference to questions in Army hygiene. Statistical forms and reports in use.

Poisons.

Signs of poisoning. Medico legal inquiries. Detection of poisoning.

Remedies.

Precautions in the use of poisonous substances.

Signs of death.

Death from Violence. To detect the manner of it.

Exercises on medical topography, showing its sanitary relations.

Exercises on the preparation of camping ground.

Drawings and Models of improved barracks, hospitals, tents, marquees, huts, kitchens, transport ships, drainage and ventilating arrangements, also illustrations of various temporary sanitary expedients, &c.

Exercises in the routine of sanitary inspections and reports by Inspectors and Deputy Inspectors.

CLINICAL AND MILITARY MEDICINE.

The object of this Course is to make the pupils acquainted with the characters and treatment of the Diseases which are most prevalent among troops, and most fatal to them.

The most important part of this Professor's duty is Clinical Teaching; and he will be expected not only to give instruction at the bedside, and by Clinical Lectures, but to examine the proficiency of the pupils, to practise them in drawing up accurate histories of the cases of disease under observation in the Hospital, and to question them on the treatment.

The Systematic Lectures will treat of the following subjects:—

1. The Habits, Duties, and Climatic Influences which characterize Military Life, and the Classes of Disease to which they are most likely to predispose the Soldier.

2. Nosology:—

a. Nomenclature;

b. Classification of Diseases.

3. Army Diseases generally.

4. Diseases of most frequent occurrence. The History, Etiology, Diagnosis, Prognosis, and Treatment of—

Yellow Fever,
Remittents,
Intermittents,
Cholera,
Dysentery,
Diarrhoea,
Scorbutus,
Phthisis, and other Pulmonary Diseases,
Hepatic Diseases,
Ophthalmia,
Venereal Diseases,
Cutaneous Diseases.

5. Geographical Distribution of Disease, especially with reference to the British Colonies and Possessions,

Principal Diseases on Home Stations.

" in Canada,
" West Indies,
" African Stations, West Coast,
" Cape of Good Hope,
" Mediterranean Stations,

Principal Diseases in Ceylon,

- " " India,
- " " Hong Kong,
- " " Australia and New Zealand.

6. Diseases from which the British Army has suffered during War, their Nature, Pathology, and Treatment:—

- Walcheren Fever,
- Peninsular Diseases,
- Bulgarian and Crimean Diseases.

7. Account of the chief Army Epidemics on record, with the Nature, Pathology, and Treatment of them.

8. Classification and Arrangement of Cases in Hospital, to illustrate Army Diseases.

History of Cases, with the view of tracing them back to their causes, at Home or Foreign Stations.

9. Bedside examination of Cases by Students under the Professor:—

- Diagnosis, Stethoscope, Percussion, Chemical Tests, Microscope,
- Prognosis,
- Treatment,
- Discussions with Students on the Cases,
- Keeping Case Books,
- Exercises in Drawing up Medical Histories, and entering Details of Important Cases day by day.

10. Prescribing. Use of Army Pharmacopœia. Medical Inspecting Duties, Recruits, Soldiers.

11. Military Hospitals:—

- General,
- Regimental,
- Field.

Their Organization, Management, Discipline, Hospital Stores, and Medicines.

12. Duties of Governors,

- " Medical Officers of different ranks,
- " Purveyors,
- " Assistant Stewards,
- " Wardmasters,
- " Nurses,
- " Orderlies.

13. Practical Exercises in the Economy and Management of Wards; in the Hygiene of Hospitals, and in the Medical Duties of Regimental Officers. The Medical Arrangement of Hospitals, more especially the Diet of the Sick during Disease and Convalescence, Nursing, Cleanliness, and Ventilation, &c.

CLINICAL AND MILITARY SURGERY.

This course, like the preceding, will be of a special and practical character, and will comprehend the following subjects:—

1. History of Military Surgery.
2. Measures adopted by the Military Powers of Europe to improve the Art of Military Surgery—
 - In France;
 - In Prussia;
 - In Austria.
3. Lectures on Surgical Anatomy, including Regional Anatomy.
4. Lectures on Surgical Operations on the Dead Body.
5. Lectures on Inflammation; its immediate importance and constant relations to Military Surgery, as a morbid and curative Agent.
6. History of the several doctrines of Inflammation. Results of the most recent investigations of the subject.
7. Burns and Scalds.
8. Ulcers.
9. Hospital Gangrene.
10. Wounds and Accidents.
11. Gunshot Wounds.
12. Incised Wounds.
13. Punctured Wounds.
14. Lacerated Wounds.
15. Wounds of Arteries.
16. Aneurisms.
17. Wounds of Nerves.
18. Tetanus.
19. Wounds of the Head.
20. Wounds of the Face and Neck.
21. Wounds of the Spine.
22. Wounds of the Thorax.
23. Wounds of the Abdomen.
24. Wounds of the Extremities.
25. Fractures.
26. Luxations.
27. Amputations.
28. Ophthalmia.
29. Syphilis.
30. Gonorrhœa.
31. Gonorrhœal Ophthalmia.
32. Gonorrhœal Rheumatism.
33. Strictures of the Urethra.
34. Diseases of the Rectum.
35. Dracunculus, or Guinea-worm.
36. Furunculus, or Boil.
37. Anthrax, or Carbuncle.
38. Poisoned Wounds.
39. Feigned and Factitious Diseases.

40. Application of Bandages and Splints.
41. Transport of Sick and Wounded; the use and selection of Ambulances.
42. The Examination and Selection of Recruits.
43. The Examination and classifying of Invalids.
44. Proportion of sick and wounded in Armies.
45. Proportion of Medical and Surgical means and Appliances to Corps and Divisions in different Climates.
46. Surgical arrangements on landing on an enemy's Coast; on taking the Field; and during and after a general action.
47. Surgical arrangements with an advancing Army.
48. Surgical arrangements with an Army in retreat.
49. Surgical arrangements with a besieging Force.
50. Trench duties, and arrangements prior to an assault.
51. Surgical arrangements within a besieged town or fort.
52. The fitting of transports for wounded, and hospital ships for convoys, or for stationary purposes.

PATHOLOGY AND MORBID ANATOMY.

The Course will consist of two divisions, as follows:—

- I.—Systematic Lectures on Morbid Anatomy.
- II.—Practical Demonstrations and Instruction in the various methods of research by which the Nature of Diseases (Pathology) may be elucidated.

These modes of instruction might be arranged as follows:—

1.—A systematic course of lectures on Morbid Anatomy, illustrated by specimens of Morbid Anatomy, selected from the Museum, and aided by accessory methods of observation, such as carefully recorded Clinical Histories of Cases, during life.

A useful method would be to select such preparations as would illustrate the Morbid Anatomy of the more important and severe Diseases prevalent at the Military Stations abroad. The types of morbid action might also be illustrated with reference to the Geographical Distribution of Diseases.

The following would be an outline of the Course:—

1. A series of specimens, to illustrate the Morbid Anatomy of Dysentery, as it has existed in the East and West Indies; in the Peninsula in the Crimea.
2. Specimens illustrating the Morbid Anatomy of the Liver, in connection with Dysentery.
3. Specimens which illustrate the lesions which occur in Fevers, similarly considered, especially of Typhus Fevers, and of Malarial, Littoral, or Paludal Fevers.
4. Specimens which illustrate the Morbid Anatomy of Cholera.
5. Specimens to illustrate Scorbutic States and Types of Disease.
6. Specimens illustrating the nature of Parasites and of Parasitic Diseases, such as Tapeworm, Guinea-worm, and the like.
7. Specimens illustrating the general Morbid Anatomy of Parts, independent of Zymotic Diseases.
8. Specimens illustrative of the Morbid Anatomy of Wounds and Injuries.
9. These topics might be also illustrated by recent specimens of Morbid

Anatomy, obtained from post-mortem examinations of patients dying in the Hospital.

II. Practical instruction would be conveyed—

1. By the opening of dead bodies, when special instruction would be given as to (a) how post-mortem examinations are to be made; (b) how the viscera are to be examined; (c) and how the results of disease-processes are to be distinguished from post-mortem changes and other pseudo-morbid appearances.

2. In this practical work of manual labour, dexterity would be required of the student. Special instruction would have to be given to each individual as to how he should use the various means and instruments of research, by which departures from the state of health may be appreciated—as, for example, the determination of the absolute and specific weights of the solid organs, membranes and fluids in health and in disease, the determination of the bulk and capacity of parts and cavities.

3. A full course of practical instruction in the use of the Microscope, and its application in determining the nature of diseased conditions.

This Microscopic Course would embrace instruction—

- (1) In the arrangement of the instrument, and how it is to be manipulated.
- (2) In the various methods of examining objects by it, of drawing the objects seen, and of measuring the dimensions of the objects examined.
- (3) In the examination of tissues and morbid products, and the application of chemical agents for their analysis under the Microscope.
- (4) Instruction in the preservation of microscopic objects.

One lecture, or series of lessons, weekly, till the topics are exhausted, would be sufficient for the microscopical instruction.

Practical instruction ought also to be given as to how specimens illustrative of Disease, Comparative Anatomy, or Natural History, are to be preserved, and sent home from abroad.

COURSE OF APPLIED CHEMISTRY.

The Course of Chemistry and Pharmacy given in the Medical School must necessarily take for granted that the Students, having already obtained Medical Diplomas or Degrees, are sufficiently acquainted with Chemistry, except in the special applications of that science to practical Army purposes, and for the illustration of questions of hygiene. This will exclude all merely elementary instruction, and confine the business of the course to the following classes of subjects:—

Elastic fluids, their general physical properties. Expansibility, compressibility, the effect of heat, cold, moisture on their volume, specific gravities. Classification of elastic fluids. Absorption of gases by water, charcoal, earth, &c. Power of gases in dissolving foreign substances.

Diffusion of gases: its laws, and influence on health.

Physical characters of atmospheric air.

Density. Colour at different altitudes of the atmosphere. Pressure, influence of on the human system at different elevations, mode of determining the pressure. Barometer, precautions in its construction, proper mode of observation, use of the barometer for the measurement of heights. Temperature of the atmosphere, influence of temperature on the animal system and

The atmosphere.

the consumption of food. Proper construction of thermometers, correct method of observation of wet and dry bulb thermometers, maximum and minimum thermometers. Determination of the elasticity and amount of vapour in the exterior atmosphere and in confined atmosphere. Hygrometers, their theory and practical uses. Determination of the relative moisture of the air over marshes and over dry regions. The temperature of the boiling-point of water, and its correspondence with the diminished pressure of the air. Formulae for ascertaining altitudes by the boiling-point of water. The preceding includes generally meteorological observations, to which may be added theories of dew, showers, rain, snow, hail, &c., effect of heat on air, laws of expansion, laws of the winds and hurricanes.

Its chemical constitution.

Chemical constitution of the atmosphere, normal constituents, oxygen, nitrogen, carbonic acid, ammonia, iodine (*I*), ozone. Organic matter and gases containing carbon and hydrogen (*H*). Proof of the presence of these elements and compounds in the air, modes of demonstrating its composition. Analysis and synthesis of common air, its composition in different localities—temperate and tropical.

Atmospheric impurities

Effects of respiration of animals on confined atmospheres. Analysis of large masses of air. Chemical nature of impurities in the air of private houses and hospitals, excess of carbonic acid, and deficiency of oxygen: organic matter, and moisture deposited on walls, furniture, &c., of unventilated rooms. Composition of the air in the holds of ships, and of sewer atmospheres. Chemical modes of disinfecting impure atmospheres by chlorine-sulphurous acid, chloride of zinc, and other metallic preparations. Theory of their action.

Water.

Composition of pure water. Oxygen and hydrogen. Physical characters of water, density, colour, compressibility. Influence of heat on water. Expansion. Amount of its expansibility. Application of the expansion of water by heat to heating apartments. Mean density-point of water well demonstrated in the uniform temperature of the ocean beyond certain depths. Effect of this law on the inhabitants of the ocean. The Gulf Stream. Influence of these currents on climate. Ice, the laws connected with its production, its distribution in the Arctic and Antarctic regions, and on mountains, glaciers, theories of glaciers, effect of these accumulations of ice on climate. Vapour, evaporation, laws of its production, elasticity, important influence of the vapour in the atmosphere on climate. Latent heat of water and of other fluids. Specific heat of water and of other bodies. Steam as a heating power, as a remedial agent in medicine, as a cooking agent, effect of high pressure, steam in the preparation of food, condensation of steam for the production of a vacuum as mode of preserving food. Evaporation of water from the earth's surface. Condensation in the atmosphere. Production of clouds and rain. Theories of rain. Effect of these influences on health.

Chemistry of the gases.

Chemical constituents of water. Distilled water required in certain diseases, best and most economical modes of distilling water, distilled water required in certain localities where alone brackish water exists naturally. Filtration of water, different kinds of filters. Removal of colour from water. Analyses of waters. Sources of the contamination of water. Selection of the supply of water for ships, camps, and barracks. Mineral waters, nature and analyses. Connection with geological strata. Hot waters, their connection with volcanic action.

Chemical characters of chlorine as a disinfecting and bleaching agent.

Chloric acid, uses in medicine. Hydrochloric acid, nature, manufacture and applications in medicine. Nitrogen, protoxide, binoxide, nitrous and hyponitric acids, actions on the animal system. Corrosive action of the last and exciter of pulmonary disease in certain trades. Ammonia. Carbonic oxide. Carbonic acid. Carburetted hydrogen or marsh gas. Olefant gas. Coal gas, modes of analyses and detection of impurities injurious to health. Illuminating power of gases relatively to candles and lamps, methods of estimating deleterious effect of these illuminating agents on the atmosphere of rooms and wards. Mode of removing impure products of combustion in connection with ventilation.

Cyanogen. Prussic or Hydrocyanic acid, nature and action generated under certain circumstances in stone fruits. Phosphuretted Hydrogen, its occurrence in marshes and cause of natural phosphorescent light, physiological characters. Sulphurous and sulphuric acids, existence of the former in the atmosphere of cities as a product of the combustion of coal and gas, likewise in the air of rooms and hospitals.

Sulphuretted hydrogen in the air of sewers and impure atmospheres.

Arsenuretted hydrogen and vapour of arsenious acid in the atmosphere of copper works, &c.

Iodine, Bromine, and Fluorine. Mode of their separation from sea weeds.

Carbon and its compounds. Diamond. Graphite. Vegetable and animal charcoal. Wood and mineral coal. Geological situation of these various bodies. Modes of analysis. Methods of preparing charcoal for disinfecting, and other purposes.

Boron. Boracic Acid. Sources and uses. More largely distributed, probably, than is usually supposed. Occurrence of boracic acid in hot springs in India, and in other colonies.

Silicium. Silica. Sand. Flint. Natural characters, important in the manufacture of glass and porcelain required of a fine quality. Mode of determining its value. Various precious stones as distinguished from quartz, rock crystal, opal, cat's eye, &c.

Phosphorus and its compounds. Diseases produced by in the manufacture of lucifer matches.

Sulphur and compounds. Geological derivation in connection with volcanic regions, originally evolved as sulphuretted hydrogen from volcanoes and hot springs.

The following division should be studied by constant testing and analysis in the laboratory.

ALKALINE BASES.—Potassium, Sodium, Lithium. Manufacture of alkalies. Natural alkaline salts distributed over the globe. Soda and potash nitres. Modes of discrimination and analyses. Manufacture of gunpowder. Glass. Analyses, Pharmaceutical preparations. Mode of detecting adulterations.

ALKALINE EARTHS.—Barium and compounds. Use of sulphate of baryta as a pigment. Poisonous action of salts of baryta. Application to fireworks. Pharmaceutical preparations.

Strontium and compounds.—Application to fireworks.

Calcium and compounds.—Lime as a mortar and as a decomposer of organic substances and disinfecter. Sulphate of lime for casts and ornaments purposes.

Chloride of Lime or Bleaching Powder.—Manufacture of as a disinfecting agent. Mode of testing its value.

Chemistry of non metallic bodies.

Chemistry of metals.

Phosphate of Lime or Bone Earth.—Its value as a manure. Mode of estimating its value, and that of manures generally. Guano, &c.

Magnesium and compounds.—Hydrate of carbonate, sulphate of magnesia, or Epsom salt, manufacture of. Serpentine containing much magnesia. Pharmaceutical preparations. Detection of adulterations.

EARTHS. *Aluminium compounds.*—Clay, value of when pure for porcelain. Occurs principally in granite countries. Means of judging of its adaptation to the arts. Alum manufacture. Value of as a preservative of cotton from combustion, as a medicine. Different kinds of earthenware, stoneware, porcelain, china. Pharmaceutical preparations. Glycerium. Yttrium. Zirconium.

Iron, manganese, nickel, cobalt, copper, silver, chromium, uranium, molybdenum, &c. Manufacture of iron, copper, silver. Mode of testing and analysing the ores. Geological source of the ores. Copper as a poison. Antidotes. Pharmaceutical preparations of these metals. Mode of detecting adulterations by tests and microscope.

Zinc, cadmium, lead, tin, bismuth, mercury, antimony, arsenic.

Manufacture. Ores and their geological sources. Modes of testing and analysing ores of these metals. Pharmaceutical preparations. Applications in the arts. Adulterations and processes for detection. Detection of these metals as poisons by tests and microscope. Noble metals. Gold, platinum, palladium, rhodium, indium, osmium, ruthenium.

Ores, and their geological sources. Testing, analysing, and assaying. Pharmaceutical preparations. Adulterations and discovery of impurities. Analysis and detection of poisons.

Organic Chemistry.

Substances forming the main portions of Plants and Trees.—Cellulose and ligneous matter.

Substances found in the Cells of Plants.—Starch, flour. Modes of Analysis. Detection of adulterations. Potatoes. Diseases affecting them. Yams. Bread fruit. Cassava. Inferiority of arrowroot, sago, &c. as food. Laws regulating the proper constitution of well balanced food.

Substances found in the Juices of Plants.—Gums. Pectic acid. Sugars. Changes produced in sugar by heat, vegetation, fermentation. Spirits, use of as food and medicine. Different species in various countries. Brandy, rum, gin, whiskey, &c. Wines, mode of manufacture of different kinds. Determination of purity. Application in health and disease. Vinegar, acetic acid, oxalic acid, uses in medicine.

Other Secretions of Plants and their Allies.—Organic bases. Carbonic oxide series. Benzoyl, salicyl, cinnamyl, &c.

Vegetable Alkaloids and Allies.—Quinine, morphine, strychnine, caffeine, theine, concine, nicotine, &c. Tests and adulterations. Uses in medicine. Use of microscope.

Colouring matters, and plants supplying them.

Acids secreted by Plants.—Tartaric acid, citric malic, tannic, meconic, konic, &c. Fatty substances employed as oils for burning and for candles. Soap making. Wax. Essential oils. Analysis and detection of poisons.

Animal Chemistry.

Organs of mastication and digestion. Teeth, causes of their decay. Nature of different kinds of food swallowed, partly derived from the vegetable and partly from the animal creation, parallelism of both species. Digestion of food promoted by cooking, which is indeed a species of digestion. Study of the changes produced in food by cooking. Convenient means of cooking. Stoves.

Application of gas and oil lamps to cooking utensils. Application of steam to cooking. Secondary digestion or conversion of food into blood. Analysis of the blood, composition in different diseases. Analysis of the various parts of the body, bones, &c., nutrition or deposition of solid matter from the blood. Flesh, or muscle, composed of fibre and fat essentially. Mode of judging of the wholesomeness and diseased state of animal food. Meat of dead animals, slipped calves, measles pork, raw ham containing entozoa capable of communicating disease.

Secretions.—Milk, analysis of adulterations, milk of different animals, value in disease.

Urine.—Analysis in the healthy and diseased states, detection of sugar and albumen, indigo, crystal line deposits. Use of the microscope. Analysis of gravel and calculi, and consideration of the scientific treatment of urinary diseases, from a proper acquaintance with the chemistry of the animal system. Urine as a manure, mode of preserving its ammonia in barracks and stables.

Nature of the skin and skin diseases. Chemical composition of skin. Mucous membranes. Importance of preserving the skin clean by sponging, brushing, bathing—hot and cold. Function of the skin. Exhalation of gas and vapour.

Respiration by the lungs a source of impurity to the air. Relation of the intestinal surface to the respiratory or pulmonary surface to be properly observed in reference to health. Chemistry of the diseases of the lungs. Tubercles. Modified albumen. General relations of the system to the external world. Animal heat.

APOTHECARY.

The Apothecary will give instruction in dispensing and will have charge of all the medicines in the establishment, and be responsible for their correct compounding and dispensing for the patients.

LENGTH OF THE SESSION.

The business of the Session will be arranged by the Senate, in such manner that there shall be at least six months' residence at the School and Hospital, which would include courses of not less than four months' instruction by lectures; that there shall be two sets of Candidates ready for examination for commissions every year.

THE SENATE.

The Senate will consist of the five Professors and the Director-General who shall preside, when present, at the meetings of Senate; but only those Members of Senate who may be present shall vote on the questions discussed.

They shall have power to arrange and manage all the routine business of the School.

They will decide on the arrangement, number, hours, &c., of the Lectures.

They will make and amend the regulations for the conduct of the Students.

They will preserve discipline.

They will have the regulation and direction of the Library, the Museum, the Model-room, and the Laboratory; and they will select all books, models, chemical and other apparatus necessary for the School, and will make up, and submit to the Secretary of State all estimates of expenditure connected with the School.

All acts of the Senate shall be communicated to the Director-General.

No act of the Senate shall be binding until it shall have received the approval of the Secretary of State.

ORGANIZATION OF MUSEUM.

The Museum should consist of four divisions:—

1. A collection of Pathological Anatomy, having special reference to the more prevalent diseases of the Army.

2. A collection of Specimens of Natural History.

3. A collection of *Materia Medica* and *Alimentaria*, containing specimens of the more important articles of the *Materia Medica* in their natural and prepared states; and also of the principal seeds, grains, pulses, and other dry or prepared articles of food, from all parts of the world.

4. A collection of plans and models of whatever is used in the Army for the conveyance, support, or protection of wounded men; models of tents, hospitals, and the like.

Classified Catalogues of the contents of these several Museums are to be kept.

LIBRARY.

The Library to consist of standard works in every branch of Medicine, and of the allied sciences. Attached to the Library should be a Reading-room, properly furnished with maps, books of prints, &c., to be kept in the Library, but the Pupils should have permission, under the regulations of the Senate, to take books to their own quarters.

EXAMINATION OF ASSISTANT-SURGEONS PREVIOUS TO PROMOTION.

This examination is intended as a test for promotion, and may be taken at any time after the Assistant-Surgeon has served five or more years.

When Assistant-Surgeons have served the requisite time they shall be examined in the following manner:—

A series of printed questions, prepared by a Board of Examiners, con-

sisting of the Director-General and the five Professors of Army Medical School, to be sealed and sent by the Director-General to the Chief Medical Officers of Stations where Assistant-Surgeons may be eligible for examination. It will be the duty of the Chief Medical Officer of the Station to deliver these sealed questions to the Candidates and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers to be signed, and delivered sealed, to the Chief Medical Officer, who is to send them unopened to the Director-General, together with a certificate from the Surgeon of the Regiment, or other superior Medical Officer, that he has availed himself of every opportunity of practising surgical operations on the dead body.*

The Assistant-Surgeon should also be required to transmit, together with his answers to the Director-General, a Medico-Topographical account of the Station where he then was, or of some other Station where he had been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he ought to send a Medico-Statistical Report of his Regiment for a period of at least twelve months.

If the Board of Examiners are satisfied with the replies to the questions, and the Director-General is satisfied with the certificates and Medico-Topographical or Statistical Report, the Assistant-Surgeon will be held qualified for promotion.

The Assistant-Surgeon will thus be subjected to three separate examinations within the first ten years of his service, each examination having a definite object. The *FIRST*, to ascertain, previous to his admission into the service as a Probationer, his scientific and professional education, and to test his acquirements in the various branches of professional knowledge.—The *SECOND*, after having passed through a Course of special instruction in the Army Medical School, to test his knowledge of the special duties of an Army Medical Officer; and the *THIRD*, previous to his promotion, to ascertain that he has kept pace with the progress of Medical Science.

* The Assistant-Surgeons may see this Certificate before being sent to the Director-General.

APPENDIX.

Proposed Classification of Candidates who pass the Examination of the Army Medical Examining Board, to be sent to the Director-General and communicated to the Professors of the Army Medical School.

CLASS I.

Names of those who have passed a pre-eminently distinguished examination, arranged in their order of merit.	Characters which distinguish the excellence of each. General estimate of individual capacity, or fitness for special service.
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CLASS II.

Names of those who have passed a creditable examination, arranged in alphabetical order.	Statement of the topics in which each has individually excelled, and general estimate of the individual capacity.
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CLASS III.

Names of Candidates who have passed the minimum examination, arranged in alphabetical order.	Statement of the particular branches of science in which each has been found to be DEFICIENT. This information will enable the Professors of the Army Medical School to carry out these instructions with a definite aim as regards this Class.
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10 LP. 13/4
Professors' Gowns

Sept 26th.

My dear Sir

By your Mem: about the

Professors' Gowns S. Wapleson

gave me a Mem.

"The Director General thinks
all the professors should lecture
in gowns - and the pattern shd.
be of course the same - black
in color - as at King's College
or London University. -"

Yours

I got Mr. Maynard's letter
to the Sec. of State, - with
this Minute.

"Proposed that the Professors
at Kathman should wear
Jowns when lecturing."

In Herbert's day -

"Approved, as there
be provided -"

Under this decision, will
you gentlemen find
your own Jowns, ready
us in the Bill - or
will you make a
definition for them
to this Office - which
would probably make
it a matter of course.

time before you got them

I think you would do
well to get them your

elves. Are they stuff or
like?

Yours in feather

Wittig.