

The oration delivered before the Medical Society of London, at their sixty-eighth anniversary, March 8, 1841 / by W.D. Chowne.

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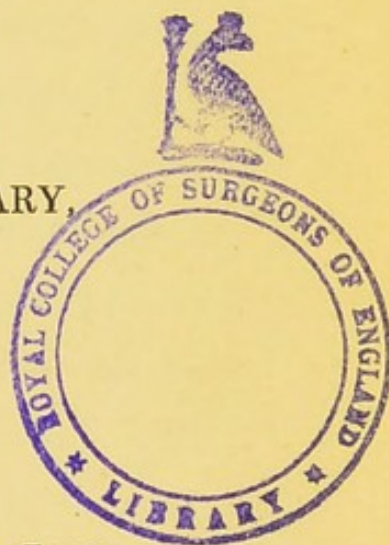
DELIVERED BEFORE THE

Medical Society of London,

AT THEIR

SIXTY-EIGHTH ANNIVERSARY,

MARCH 8, 1841.



By W. D. CHOWNE, M.D. EDINB.

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS, LONDON; FELLOW OF THE MEDICAL SOCIETY OF LONDON; HONORARY MEMBER (AND LATE PRESIDENT) OF THE WESTMINSTER MEDICAL SOCIETY; PHYSICIAN TO THE CHARING-CROSS HOSPITAL; LECTURER AT THE CHARING-CROSS HOSPITAL MEDICAL SCHOOL, ON OBSTETRIC MEDICINE, AND THE MEDICAL TREATMENT OF WOMEN AND CHILDREN; AND ON MEDICAL JURISPRUDENCE; CONSULTING PHYSICIAN TO THE LONG-ACRE EPISCOPAL CHAPEL, DORCAS SOCIETY; CONSULTING PHYSICIAN TO THE LADIES' CHARITY OF SAINT GEORGE THE MARTYR, ETC.

PRINTED AT THE REQUEST OF THE SOCIETY.

LONDON:

G. DAVIDSON, PRINTER, SERLE'S PLACE, CAREY STREET.

1841.

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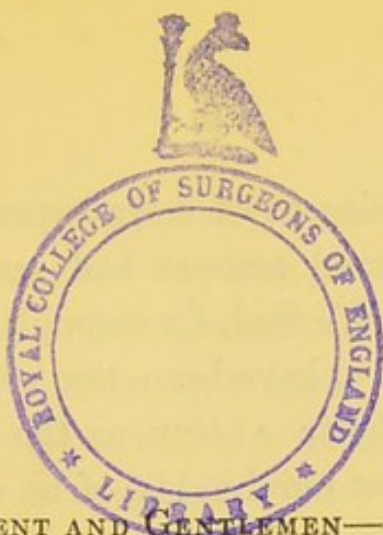
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TO THE READER.

THAT an anniversary address, such as that comprised in the following pages, is permitted to be rather of a general character, than required to be strictly technical; and that those who confer the favour of their presence on the anniversary commemorations of scientific societies, are not limited to members of any individual profession, but include the learned, and the lovers of science under whatever name, are circumstances too well known not to render unnecessary, the offer of excuses, for such descriptions and elucidations as partake of an elementary character.

It may be necessary however to bespeak indulgence for the extent to which additions have been made in the form of notes; more particularly for those relating to Forensic Medicine, but it is hoped that the close and important connexion that exists between forensic justice, and the uses to which Medical Science is applied, may be deemed sufficient apology.

THE AUTHOR.



MR. PRESIDENT AND GENTLEMEN—

IN addressing an assembly like the present,—constituted of members of a learned profession,—I cannot be otherwise than apprehensive lest the high and sterling character conferred on the “Medical Society of London” by its honoured founders, and preserved through a long series of years by the zeal and talent of able successors, should (in the performance of the arduous, though honorable duty which has been delegated to me,) be inadequately sustained.

The means by which medical science is *advanced*, and the uses to which it is *applied*, embrace topics of great and unceasing interest: to some of these I would venture to advert, not however in the expectation of being a contributor to the mental stores of those whom I address, but in the hope that subjects so congenial, and so associated with their daily pursuits and studies, may not be devoid of interest, though only for the subject’s sake.

In remarking upon the individual branches of science which concur to advance the knowledge of medicine, (to improve which knowledge gave origin to the “Medical Society of London,” and still animates its proceedings,) we cannot fail to perceive that both the diagnosis and the treatment of disease, had been brought

to a considerable degree of correctness and usefulness, even when collateral sources had scarcely begun to afford it any aid. We find, for example, in the works of Hippocrates, (said to have been the FIRST philosopher who applied to physic ALONE as the business of his life,) proof the most indubitable, of an extensive knowledge of diseases and of their remedies, and that a degree of proficiency and accuracy had been attained, which almost startle the understanding, and surpass our belief.

Whilst we contemplate that the bare opportunities of observing disease, and of noticing the effects of means used for its relief, then constituted the only materials on which a superstructure of medical knowledge could be raised, it is a proud reflection for the profession, that, with means so limited, a fabric of medical learning so efficient, and so available, could be achieved. Such, indeed, were the attainments of the medical philosophers of that early period,—such their diligence in observing facts, such the accuracy of their discrimination and the soundness of their reasoning, that they left but comparatively little on which the mere force of observation could improve,—and attained a limit, which it had been scarcely possible to pass, but by the aid of those auxiliaries which other branches of science have since supplied.

Whilst we perceive that, at the period when Hippocrates wrote, the structure of the human body was involved in extreme obscurity,—that, in a work considered to have been written by him on the bones, the spinal column is stated to consist of twenty vertebræ only; that phlegm was attributed by him to the head,

and black bile to the spleen (1)*; whilst we further perceive that the terms used by him were vague,—that the same word (*νευρον*) implied a nerve, a ligament, and a tendon,—that one term only (*φλεψ*) was used to designate a vein, an artery, and an excretory duct; and that blood, the nervous fluid, and the *air* inspired, were all occasionally included under the same name, (*αιμα*); we cannot doubt that his medical knowledge gained but little by his anatomical, or that the dissections which he undertook, performed as they were for the most part on animals, conferred but little on his knowledge as a physiologist (2).

With reference to the immediate connexion of anatomy with the practice of medicine, we perceive that, although it does not teach the remedies of a disease, nor the specific origin or character of disorders, it enables us to know, when pain is referred to any part, what particular organ we may expect to find diseased, and what function disordered. It enables us to judge, accurately, of visible change in the form, size, position, and situation, of parts which come within the sphere of our sight; and to exercise, by the touch, similar discrimination with reference to those which are not superficial. It enables us to trace pain to its true source, even when circumstances of delusive character intervene, and to distinguish between sympathetic pain and pain that is idiopathic.

From anatomy, however, we derive advantages beyond those connected with mere situation, position, and construction: as the introduction to physiology, it

* The notes to which the numbers refer are comprised in the Appendix.

has opened the portals of knowledge, vast, important, and interesting.

The anatomist discovers in the origin and the insertion of muscles, and their obvious influence when in action, the *mechanism* of those means by which our several members are moved upon the body, and the individual parts of our members are moved upon each other; he perceives in these bundles of fibre, the principle of motion manifested in their decurtation, and thus has demonstrated to his view, besides the mechanism of the apparatus, the physiological attribute called contractility.

By the exercise of his ingenious skill, he traces the course of the air vessels, from their trunk, the *trachea*, through their innumerable ramifications, and ultimate terminations in the air cells of the lungs; he traces also, in their course, the blood vessels as they proceed deeper and deeper into the pulmonary tissue, approximating always more and more closely to the air cells, until the delicate structure that separates them, becomes scarcely a barrier to the actual contact of their respective contents; to this proximity of the vital fluid, and the air inspired, he is led to impute the *obvious* changes which the blood undergoes in the act of respiration, and is furnished with data whereon to proceed in the prosecution of his researches, with relation to other vital processes.

Dissection traces the connexion between the encephalon and the medulla-spinalis, constituting the great nervous centres—of the sentient, the motory, and the excito-motory systems; and the numerous and complicated ganglia; and the nerves which traverse all parts

of the body: it traces some to those organs where the senses reside, some to parts where the powers of voluntary motions reside, and some to parts which, by a wise ordination of Providence, are not subservient to the will,—and thus again acquires materials for physiological inquiries into the most subtle phenomena of animal existence.

Anatomy further furnishes the source whence has been derived knowledge of incalculable interest and value, forming the foundation of pathology.

In the mere process of dissection, however, the anatomist encounters much that is discouraging, nor would his perseverance be fully compensated, did the employment unfold nothing to his observation, beyond mere form, distribution, and other structural peculiarities of individual parts; but when in his contemplations, he associates these, according to the relation and order in which nature has united them; when he traces the dependence of one part upon another, and their marvellous adaptation to each other; when he acquires an insight into the beautiful structure of that organ, which may be called the centre of life, (the heart,) and traces the divers channels proceeding from it, through their divisions, subdivisions, and finally infinite ramifications; when he comprehends the beautiful mechanism by which it acts,—the order in which its complicated and indispensable functions are performed,—and the accuracy and constancy with which the performance is sustained through all the vicissitudes and commotions, both mental and bodily, of a long life,—in all positions and under all circumstances;—when he connects the fact, that the vital current requires supplies from the

elements of the food we eat, and from those of the air we breathe, with the arrangements that he discovers for the attainment of both these objects(3): when he contemplates, that—in addition to the process of nutrition, (with all its apposite contrivances for repairing the wear and tear of the system,)—a process is also necessary for separating from the circulating fluids, whatever may not be available in the general economy, and finds combinations of organs, subservient to the office of separation, constituting a system of contrivances not less appropriate, he cannot fail to feel that the labour of the occupation is merged in the deep interest which it is calculated to inspire.

Neither does he find that the wonderful harmony of this *complicated* structure, is maintained, under such circumstances ONLY, as may appear to be congenial to it,—but sees that seeming incompatibilities are reconciled in the healthy state of man, and the modified temperature of his body, in every climate: that his constitution permits him to inhabit *all regions*,—that by a power existing within him, requiring no exertion of the physical faculties to carry it into effect, nor even of the mind to will it,—sustains its silent but persisting operation, adapting his *constitution* to the inclemencies of each particular atmosphere, his *bodily faculties* to the resources necessary for obtaining the means of sustenance(4), and his *powers of digestion and assimilation* to the peculiarities of such food as may come within the sphere of his attainment(5).

In the investigation of these phenomena, the whole range, not only of animated creation, but of organic life

in every shape, comes within the scope of his research; and, in studying the phenomena of animal life, and of vegetable life, under all varieties of circumstances, he is enabled to deduce analogies which assist him in the comprehension of those that appertain to the physiology of man; analogies indeed, in the absence of which these phenomena had still remained in the deepest obscurity. Whether the physiologist directs his attention to the air; to the earth; to the waters of stagnant pools, of streamlets, of rivers, or of the vast ocean (6); he finds in each, and in all parts of the globe that are accessible to him, objects of interest and instruction; the burning regions of the torrid zone; the eternal snows of the arctic regions; the summits of the highest mountains; and the *depths of caverns*—may all be said to teem with life; he discovers, that in *warm damp* regions, the exhalations from rivers, swamps, and forests, swarm with insects (7); that the arid sands in the scorching heat of Africa are scarcely less prolific (8); that, on the one hand, animal life is not incompatible with the high temperature (120°) of the thermal baths of Albano, as in the instance of the *terbo thermalis**; and, on the *other*, that, in the extreme northern latitudes, myriads of animalculæ are brought into short-lived existence during the summer solstice, in the pools formed by the sun on the snow, and on the ice (9).

Neither does he find the range of the vegetable kingdom less extensive; he meets with vegetations in the most remote parts of the earth, in the depths of the ocean, and in caverns where human research never be-

* A shell fish indigenous in the Adriatic.

fore penetrated, even on the cold and seemingly sterile surface of the stalactite (10); he finds it, (vegetable life,) in the instance of different species of conferva and ulva, in springs at the boiling temperature (11); and in the instance of a species of marchantia *, in springs, the *mud* of which is above the boiling point; whilst in the opposite extreme of temperature, he still discovers that vegetation is not wholly suspended.—(12.) Pools, the waters of which are mephitic, and soils that are poisonous, both of which though destructive of animal life generally, yet have their special worlds of living things, qualified by their specific organization, and by their peculiar physiological attributes for the elements they respectively inhabit. He further discovers that animals as well as vegetables are indigenous in sulphureous waters (13); and that, in the refuse of lead mines, which is so poisonous to other plants as to be used instead of gravel, in situations where to destroy vegetation is desirable, the *arenaria verna* grows, even in luxuriance (14).

Where the boundaries that circumscribe the researches of the physiologist may be, is *uncertain*; nature appears to have limited animal life, with reference to the earth itself, to the external crust: the interior solid matter of the globe, not being accessible to those elements which appear to be essential to life, is deemed to be incapable of sustaining it. At what height the *atmosphere* may cease to be a dwelling place for living objects is unknown, and, indeed, scarcely admits of being estimated with any degree of accuracy (15), while the

* Staunton's Account of Lord Macartney's Embassy to China.

depths at which the ocean becomes untenable, has been deemed to admit of even probable computation.

According to received opinions, in relation to the laws which govern the phenomena of light, the rays of even a vertical sun do not penetrate to a greater depth than 100 fathoms, and, as light has been deemed to be essential to life, the furthest *limit* to which its rays descend, have been regarded as the boundary of animal existence (16).

Should this law, however, not be absolute, (as there is reason to believe it is not,) then may we imagine an extension of marine life incomparably greater, and, whether the ocean has a depth of from three to five miles, as computed by some, or of ten miles, as supposed by others, that it, (life,) extends, even to its deepest recesses (17). What, however, may be the law of light, and of other elements in reference to the support of vitality, and what the actual bounds of the animal and of the vegetable kingdoms, constitute yet an interesting inquiry for the physiologist, not only to ascertain into what regions they may extend, but in the possibility of discovering modes of existence, and, by consequence, analogies with which we are still unacquainted (18).

Neither anatomy, nor comparative anatomy, nor the analogies supplied by the vegetable kingdom, however, can enable the physiologist to obtain a knowledge of the constituent principles of the various solids and fluids of the body, and the modifications they undergo in the animal economy, without the aid of chemistry; that potent science which embraces in its magnificent grasp,

the materials of which all things are comprised, which reduces the minutest appreciable particle of matter to its first elements on the one hand, and demonstrates the *laws* by which their most *complicated combinations*, and most *vast accumulations* are governed on the other; which deals with atoms and with immensities, by a power that is almost irresistible; which has the capability of rending asunder elements held together by the strong affinities of nature, and of again reducing these elements to the influence of their primary affinities and to their original state, exercising a power that is almost creative.

A science which follows so closely the footsteps of the natural phenomena of the physical world, that the most subtle influences by which they are governed are secrets scarcely beyond its reach; which measures the individual proportions of the constituent atoms, in any given aggregate of matter, and finally which attains, in its deductions, a degree of exactness almost equal to the precision of mathematical solutions, proclaims its own grandeur, its own usefulness, and its intimate connexion with that study which has for the object of its research, the relations existing between man, and the physical agencies by which he is surrounded.

Other branches of natural philosophy, also form a useful and a fitting accomplishment for men occupying the station in society to which the medical practitioner belongs, and are, moreover, indispensable to the medical philosopher: pneumatics, hydraulics, mechanics optics; a knowledge of the laws of heat, of gravitation, and of motion, are all requisite to a full and correct comprehension of the human fabric; of the combinations by

which symmetrical proportions are attained, powers conferred, various complicated processes performed, and the general harmonies of the whole preserved ; combinations which, when considered in connexion with the mental endowments of man, afford a subject of contemplation, than which, perhaps, nothing in creation can better teach him to appreciate, (so far as his finite faculties are capable of appreciating,) the omniscience, the omnipotence, and the beneficence of the Creator.

The application of physiology in connexion with therapeutics, to the discovery of remedial agents, constitutes an important study. When we reflect upon the relation that subsists between diseases and their remedies, we cannot fail to perceive, the value of researches connected with natural history, which impart a knowledge of the sources whence these are derived ; nor of those connected with other branches, which show the fitness of different matters for different uses, their individual powers, and their powers when qualified by ingenious combinations ; the different modes of compounding some, of analysing others ; of ascertaining in what particular part any given principle resides ; the circumstances under which that principle may be found in a state of the greatest activity ; the modes of obtaining it in its best form ; and of preserving it in its greatest perfection ; points of interest, which attach to all curative agents, whether of the animal, the vegetable, or the mineral kingdom.

The interest which attaches to this department of medical research is enhanced by the claims which it has upon our vigilance, discrimination, and precaution.

That laudable ambition, which is almost universal in the medical profession, and that emulation which prompts the ardent mind to seek for additions to those means of cure which are already possessed, require to be guarded against numerous sources of fallacy.

1st. The sanguine experimenter is prone to admit too readily, the efficacy of agents of which he may have formed a favorable opinion; and to urge too forcibly, the merits which he may have ascribed to the object of his predilection.

2ndly. Coincidences frequently conspire to give erroneous impressions; the experimenter, although not sanguine, although having no bias and no predilection, is himself led to wrong inferences, and, in the consciousness of his own integrity, becomes zealous in recommending to his professional brethren, that which, to himself, may have appeared to be an acquisition and a boon.

3rdly. Empiricism, in that sense of the word which corresponds with its popular acceptance at the present day, adds its mischievous help to thrust into use, its baneful and spurious additions, practising every device that ingenuity can invent, to further its sordid and unworthy ends.

The pleasure which arises from the belief that a new remedy has been discovered, the charm of novel modes of treatment, the reliance which bold and confident assurances are calculated to command, all conspire to take the judgment by surprize, and to obtain even for error, a place in the society of doctrines that are true, and sound, and based on the testimony of time, of experience and

of strict impartiality. This association, however, is happily of but short duration, yet, short as it may be, it is injurious to the interests of the public, and disparaging to the character of our profession. In the outset of life, the young and the sanguine of all professions are liable to be misled by that which is the natural result of immature experience, too much hope and too much confidence; but however amiable and generous these may be, or however much they adorn the character, and are beautiful qualities in their relation to private life, they are not suited to the advancement of a grave, important, and complex science, such as that in which we are engaged; on the contrary, few things tend more to that object, than the exercise of sound and guarded discrimination, in the yielding or withholding of confidence, where new doctrines are the subjects of consideration.

Those who can look back, through a series of years, upon the phantasies which have been boasted into ephemeral fame, by the dupe, by the enthusiast, and by the empiric in turn; who have seen these visions come and go, ushered into being with *pretensions* the most *ostentatious*, but exemplifying, by their rapid lapse into neglect, their utter worthlessness and nothingness, will hold themselves more than justified for the exercise of that which the world calls scepticism, and for increasing their reserve, in proportion as the claims upon their faith, may have been confidently and authoritatively advanced; they may perhaps, deem themselves excused, should they, with more than common freedom, entertain the opinion that suspicion ceases to be a failing, where the questions relate to a science of facts, and where the

character of the science, and the public health, (of which that science is the accredited, and should be the faithful guardian,) are involved in the issue.

Our duty obviously demands, that we should watch closely the delusive testimony by which accidents and co-incidences, may give to what is *ideal* only, the semblance of reality; to scrutinize, narrowly, whether there is a real, or only an apparent connexion between *assumed* causes and seeming effects; to be mindful, not only that the facts presented are clear and defined, but that they are placed in just and philosophic relation to each other; and finally, that the *reasonings* upon them, and the conclusions *deduced from* them, are in strict and rigid accordance with the imperative claims of truth.

It is not to be denied, however, that a degree of zeal and honest enthusiasm, and of its *antagonist* impulses, in this, as well as in all other departments of our profession, are mutually beneficial; that the impatient activity of mind which explores new regions for new materials and new facts, and which, on the one hand, in its eagerness to theorize waits not for the fulness of knowledge, is tempered, and we may say rectified, on the other, by the reserve and caution which belong to the less sanguine.

These qualities of the mind are peculiarly exemplified, their respective tendencies indulged, and their reciprocal and salutary influences advantageously exercised in societies instituted like the "Medical Society of London," for fostering the essays of professional zeal on the one hand, and for permitting full and free discussion on the other.

Since we were last called together upon an occasion like the present, a highly esteemed Fellow of the Society, whose attendance was wont to be constant; who pursued his profession with great talent and assiduity; who read in the society several learned papers; on whom the society conferred the high honour of calling him to the chair, and the duties of which he ably performed, has been removed by death from his useful career. Mr. Bryant lived and died in the enjoyment of high esteem and regard—the meed of his excellence as a member of the profession, and of his urbanity, courtesy, and integrity in the social relations of life.

The study and improvement of topographical knowledge we find deeply interesting to the medical profession, affording a vast field of useful and various discovery, supplying facts of great importance in reference to the particular effects of different countries on the physiological condition of man.

In some we find the influences so powerful as to give to those who are subjected to them, the characters of different races of beings, which yet are not incompatible with the preservation of health: these we see manifested in the varieties of form, size, colour, and other peculiarities of different nations; in the different periods at which the state of adolescence terminates; at which that of the subsequent stage is complete; at which maturity is attained, and at which the declension of life ensues; such influences, however, being in constant

operation, the constitution becomes familiarized and suited to the inclemencies of the respective countries.

Of the influences which are not constant, but in a frequent state of variation, and by which the health is prone to be disturbed, we find examples in those atmospheric changes which constitute the source of endemics and epidemics, illustrating the connexion that exists between certain topographical peculiarities and certain diseases.

We perceive, that in parts subject to noxious miasmata, as the fens of this country, and the United Provinces for example, intermittent and remittent fevers prevail. Of this we have still stronger examples in the topographical character of the plains of Bengal, after the overflowing of the Ganges: we trace, for instance, that mighty river from its source in the mountains of Thibet, through an extent of 1000 miles or upwards, receiving tributary streams from the countries on either side; collecting, and bearing on its surface, the dead of the wide districts through which its waters are poured(19); carrying also, in its gigantic current, impurities animal and vegetable, almost beyond the mind's imagining, which, being finally deposited on the plains(20), present a vast expanse of miry, slimy, marshy surface, exposed to the heat of an almost vertical sun, occasioning profuse exhalations of a character still more noisome and pestilential. In connexion with *these* topographical peculiarities, we perceive that remittent and intermittent fevers of a more formidable character afflict the country; that the degree of their prevalence and of their virulence is in proportion to the extent of surface exposed; and that the periods of their appear-

ance and of their disappearance correspond with the periods at which the inundation and subsequent evaporation occur.

Turning from the plains of Bengal to the coast of Coromandel, we find a climate and country widely opposite, and diseases widely different; we find a higher temperature(21); comparatively little rain(22); a gravelly or sandy soil absorbing that little almost as rapidly as it descends, consequently not admitting of inundation or exhalation, and that under these topographical peculiarities, idiopathic affections of the liver constitute the endemic disease of the country.

In prosecuting the subject still further, we find that where the topographical peculiarities are intermediate, so also is the character of the prevailing disease.

The climate of Egypt combines, in a considerable degree, the peculiarities of both, having the inundation of its central river behind the high lands bordering the coast, like that of the Ganges; and its samiels or hot winds, with a high range of temperate, like that of Madras: accompanying the deluges of the Ganges however, there are *constant* falls of rain, keeping *all* parts not *wholly* covered by water, in a semi-inundated state; while in Egypt, what is not *perfectly inundated* is perfectly dry. In Bengal, after the waters have subsided, there remains a humid surface of impurities; in Egypt, on the contrary, by the power of the sun, the exposed surface is turned into a solid crust, split into segments, and presents everywhere deep fissures, characteristic of its parched condition(23). In accordance with these modifications, constituting the *mixed* character of an *inundated* country and an *arid* country, we find the pre-

valence of diseases incidental to each, and, according to the best authors, the one or the other predominates in frequency and in degree, according as the damp, or the dry may have been the predominant character of the season (24).

He finds also, examples of peculiarities, consequent upon peculiar influences of a more permanent character; in the cretan, for instance, of the valley of the Rhone : in the goitre of the Alps, and of mountainous parts of Italy ; as well as of certain mountainous districts of our own country ; in the Plica of Poland ; in the Elephantiasis of Madeira, Saint Domingo, and the Isle of France. In the prevalence of scrofulous diathesis in most parts of Europe, while it is scarcely known in Africa ; and in the external peculiarities of the Albinos, so common in the Isthmus of Darien, that travellers have taken them for a distinct tribe ; to which illustrations, almost innumerable others may be added.

Under the comprehensive title by which our profession is denominated "the healing art" is necessarily included that branch more especially designated surgery.

Although, in former times, this department was deemed unworthy of academic cultivation, of dignified station, or of scientific association * ; although denounced on the Continent as unfit for the hands of

* As late as 1668, the surgeons were under the jurisdiction of the first barber of the king. Felix, who operated on Louis XIV, represented to his majesty the great inconvenience of this, and procured its reform.

men of literature; and at periods less remote, (as we have seen in our own country,) it failed to occupy that position which *other branches* of science enjoyed: yet, in later and more enlightened times, mankind have discovered that it may well claim to rank amongst the first of *those* which have for their object, the melioration of human suffering; neither is this a change for which it is indebted to adventitious circumstances; it has, on the contrary, by its manifest and intrinsic value, by the sound and scientific sources whence have been drawn the elements of its advancement, and from the large benefits which it has acquired the power of conferring, proclaimed its own importance, accomplished its own elevation, and acquired the exalted station which, throughout all civilized countries, it now most justly occupies.

With whatever feelings of admiration, or of respect, we may contemplate the past in reference to the men by whom surgery has been improved, that contemplation at the present moment, is hallowed by the mournful event which has numbered and mingled with the dead, a revered Fellow of this Society, the faithfulness of whose devotion, and the earnestness of whose active zeal in the advancement of our common object, were perfect; of whom to speak, as of the past, spreads a gloom and a shadow on the future. In him, whom a decree of Providence has called from pursuits worthy the best human impulses, and the most zealous human energies, and from a position the most honorable to which professional zeal and talent can attain, were combined, attributes of the mind, and of the heart, and

of the hand, which conferred, on their gifted possessor, power and acuteness of perception in judging of the ailment, and in adapting the remedy; readiness of resource in the difficult details of practical surgery; kindness and gentleness of manner; and felicitous manual dexterity,—which rendered his the perfection of surgical skill.

To the late Sir Astley Cooper, the medical profession paid the homage of their admiration, confidence, and regard; and, feeling and acknowledging his transcendent abilities, his never-ceasing industry, and his vast acquirements, conceded to him, by common consent, *PRIORITY* in the catalogue of the most celebrated surgeons of his day.

The quality of his mind was happily such as *MOST* conduces to the real advancement of the sciences and of the arts; *truth* was the gem of his research; *facts* were the treasures he equally delighted to diffuse and to reap.

Less ardent and discursive in imagination, than indefatigable, practical, and accurate in research, the stores of his accumulation constitute not hypotheses, or theories, the transitory glories of a day. His labours rendered legible new truths in the pages of nature, imparting in her own unerring language, knowledge of human structure in health and in disease, which have conferred improvement on the *skill*, and elevation on the *character* of the surgeon of his own day, and which will *endure* and be *available* to future generations.

His writings, replete with information, anatomical, physiological, and surgical, at once enrich the medical literature of the period in which he lived, and possess

the sound and healthful elements of improvements yet in the matrix of time.

When we look back upon the immense labour that has been bestowed in the acquirement of medical knowledge; when we contemplate the zeal, and the talent employed in its advancement; and the numerous channels by which the results of these labours conduce to the public good, it is impossible for the medical practitioner, even in the midst of its anxieties, its toils, and its privations, not to cherish a feeling of self-gratulation that his lot is cast in a vocation of so much honour and so much usefulness. There are few sources whence benefits so important, so extensive, and of influence so beneficent, flow into the current of human affairs; few which contribute in so many ways to the general welfare of mankind, yet *none* that are so imperfectly known as the fountains of the good they impart. The connexion between medical science and man in his social relations, does not proclaim itself by outward and obvious manifestations, except in those which exist between the physician and the sick. Its influences however, in the preservation of general health; in the affairs of medical police and forensic jurisprudence; and indeed in the broad administration of the civil polity of the state—pursue in silence, their persevering operations, ardent and unwearied in advancing its own usefulness, and zealously directing its endeavours to the advancement of those objects which have for their aim and end, the more perfect application of its acquirements to the general good.

When, with reference to the public health and sanatory regulations, we contrast the present period with that of the seventeenth century, memorable for the the great plague years of London, a period which (when considered as matter of history and as an eventful epoch in the records of the human race,) is but as yesterday, we cannot fail to be filled with awe at the *wide* devastation which one single disease *alone* carried in its direful track, nor to entertain an exalted admiration of the high-minded men who abandoned not their vocation in the hour of calamity and peril, but assiduously ministered to the sick, in the midst of pestilence and death; by the impulse and example of whose philanthropic spirit, zealously emulated by succeeding physicians through future ages, salutary regulations have been devised, which providentially, have been followed by the exclusion of this awful scourge for nearly two centuries, from the arena of its former havoc—a havoc in which all classes were involved; of which it is stated in the *Loimologia** of Dr. Hodges, that “the divine was taken in the exercise of his priestly office to be enrolled amongst the saints above; that some physicians could not find assistance in their own antidotes, but died in the administration of them to others; that although the soldiery retreated from the field of death and encamped out of the city, the contagion followed and vanquished them there; that many in their old age, others in their prime, sunk under its cruelties; that of the female sex most died; that hardly any children escaped; that it was not uncommon to see an inheritance pass succes-

* ΛΟΙΟΜΟΣ pestis et λόγος.

sively to *three* or *four* generations in as *many days* ;” that the number of sextons was not enough to bury, nor the burying places sufficient to hold, the dead ; and that often those who one day attended the funeral of their friends, were *themselves*, on the following, carried to their graves :—such is a description given by a physician of that time, an actor in the dreadful scene.

From another source, the bills of mortality, where facts are reduced to figures, and presented without the force and adornment of language which narrative admits, we find even the narrative surpassed in its painful impression on the mind, by the mute but not less eloquent rhetoric of numbers. We find that in one memorable year, (1665,) the victims of the plague were 68,596 ; that for some time 8,000, and, in one instance, 12,000, died per week, nor did even this appalling mortality, either from the labours it entailed, or the terrors it presented, drive the physician to seek repose or security in the abandonment of his dangerous vocation(25). Neither “ When the Members of the College of Physicians, by Majesty in his royal authority, were commanded to write somewhat in English, that might be a general directory in this exigence, was it satisfactory to that honoured society, to discharge their regards for the public health, by that only which was required of them, but some were chosen out of their number and appointed particularly to *attend* the infected on all occasions ;” such was the devotion of our predecessors, generous and disinterested beyond all power of praise, and not the less honorable, that the contest was so unequal.

Direful and indomitable, however, as this hydra pest was, under the co-operation of *want*, uncleanness, pent-up human effluvia, densely-peopled, ill-ventilated localities (26), and local insalubrities, it has nevertheless, been PROVIDENTIALLY permitted that human precautions should not wholly fail in the mitigation of these distresses. The progress and the utility of medical science, are conspicuous in the happy contrast between the times adverted to, and those in which we live. According to the Bills of Mortality, which themselves had their origin in the ravages of the plague, and were instituted to record its numerical degree of affliction in relation to human life,—in the year 1592, the victims of that pest alone were 11,503, and, subsequently to that period, five other dreadful years stand out in frightful distinction*, the aggregate number of victims of which five years *alone* was 163,488. From 1603, the earliest period at which the bills, regularly kept (27), are *extant*, to 1769, a period of time comprising nearly three quarters of a century, three years only were exempt. After that period the plague ceased to swell the metropolitan mortality, and to the present time, not a single case has been added—a broad impressive fact, from which conviction of the influence of sanitary regulations and local and domestic improvements is inevitable (28).

The sweating sickness, and febris ephemera, with other forms of disease, have also ceased to be known amongst us, and dysentery (29), remittent fevers, and agues (30), have become comparatively rare, a change

* 1593, 1603, 1625, 1636, and 1665.

without any appreciable corresponding alteration, in the atmosphere by which we are surrounded.

We certainly perceive, without reverting to proofs which geology might supply, that in the progress of ages and of centuries, the temperatures of other climates and of our own have undergone considerable change, as is evidenced by the formerly frozen state of the Mediterranean (in 775,) along its shores to the distance of fifty leagues, according to Glycus; in the Adriatic having been *commonly* frozen in the time of the Romans; in the constantly frozen state of the Rhine and the Danube, and other rivers of Gaul and Germany, during the winter, making it necessary to cover the ice with straw, to render the passage over them secure, according to Diodorus Siculus*; in the freezing of the Euxine, according to Ovid; in the breaking the ice of the Tiber, in order to obtain water for the celebration of superstitious rites, as alluded to by Juvenal; in the instructions for protecting the cattle from the inclemencies of the Italian winter, as given by Virgil; in the earlier period of our own former harvests, and in the unclothed state of our early inhabitants as recorded by Cæsar; in the growth of large luxuriant wood on our highest hills, in situations, where, from the degree of cold which at present prevails they could not grow, as commented upon by Kirwan; in the larger growth of our black cattle as recorded by Robertson; and in numerous other examples furnished by the animal, vegetable, and mineral king-

* "During the most severe winter that has occurred during the last century, (1795,) there was no river of any consequence frozen over, even in the northern parts of France."

doms of this and other countries. Within the range of these changes, however, the influences connected with our present subject, do not come, either as regards their chronological, or their physiological relations.

We find, in former annals of mortality, fearful records from small pox, a disease which, although not at all times exercising the fulness of its devastating powers, was wont to be still an insidious and an unceasing destroyer of human life, compensating by the *constancy* of its spoliation, for the occasional remission of its severity, the incidental miseries of which, even when life was not the sacrifice, inflicting privations of one or more, sometimes annihilating ALL those most precious senses, which serve to confer on man, the attributes and means of social existence. In the blind, the deaf, the dumb, and the imbecile; in the halt, the deformed, and the disfigured, we too often behold the wreck of all that had been perfect in sense, and in mental power; in personal beauty, and in bodily endowments (31).

The philanthropic zeal which originated the discovery by Jenner, was eagerly and ably seconded by the whole of our profession; and the antidote of that direful evil (variola,) had, at once, the *prompt* and *powerful* advocacy of all classes of medical men, who simultaneously both urged the inestimable value of the boon, and became from the centre of the empire to its furthest limits, the voluntary, and in many thousands of instances, the gratuitous administrators of its blessings

to the poor; merging all feelings of personal interest in the gratifying prospect of consummating a great public good. These, and endless similar examples, at once both characterize and adorn the history of the healing art.

It were difficult to advert, however cursorily, to that quality in the human character, which is, perhaps, best expressed by the comprehensive word philanthropy, without indulging in the reflection that the laudable vocation in which our honored predecessors toiled, which, in succeeding ages, has been more defined, and which, in a more perfected form has been denominated a profession, enjoys, if not a proud pre-eminence, at least a proud celebrity, for the intrinsic spirit of disinterestedness which pervades and animates its ruling springs of action; a profession which, in the purity of its ethics, virtually excludes from community and fellowship, all by whom the general good is made subservient to interests that are private: the empiric indeed, may find favour amongst the dupes of his creation, but to the profession of which he is nominally a member, he is virtually an alien and an outcast.

However large may have been the benefits already conferred by medical science on that department of national policy constituting medical police, we cannot, in turning from the past to the present, fail to be reminded that society at large, is still receiving benefits not less important and extensive, at the hands of the medical profession.

In the government of states and the advancement of the social condition, we find a correct estimate of the relations and dependencies in which men stand in reference to the state, and in reference to each other, to be indispensable; the government requiring to know the moral, the physical, and the numerical strength of the population, with the contingencies by which these may be enhanced or diminished; the individual requiring to be informed of the nature and degree of his dependencies on the institutions of his country, on the community in the aggregate, and on the members of that community in their individual capacities; on the occupation he follows; the locality he inhabits; his liability to disease; and the probable duration of his life under any given circumstances.

In the report of a select committee of the House of Commons in 1827, on the laws of friendly societies, we have at once proof of the *VALUE*, and of the *deficiency* of such knowledge: "the *means* for making an accurate and extensive calculation of facts, whereby may be facilitated the solution of all questions depending upon the duration of life," are declared to be *INDISPENSABLE* but *WANTING*. By a recent enactment, the legislature, in the exercise of its rightful authority, demands from persons contracting matrimony, that they register their marriage; from parents, that they register the birth of their offspring; and from survivors, that they register the death of those whom they survive, with their age, occupation, and other useful data; specification of the *cause* of death, however, does not admit of being peremptorily, and is *not* by the enactment adequately, provided for.

In this emergency the profession has been called upon for its *aid*, and the result has *been* that the deficiency is freely and liberally if not completely supplied.

As members of the community, we may hail with gratification the immense accumulation of invaluable data, which may be said to be daily and hourly pouring in from every city; from every hamlet; from every chamber wherein a human being departs this life; which in the hands of the Registrar-General and of his talented coadjutor, is placed in an available form before the deeply interested public; *but* as *members* of the *medical profession*, it may perhaps be permitted to us to recollect, with feelings of peculiar satisfaction, if not of pride, that the record of every death comprises also the record of a medical opinion; that every such opinion is the result of much time and much labour, bestowed in the acquirement of medical skill; that the *advantage* of that skill is accorded by members of the *medical* profession, for the advantage of *all* professions, and *all* classes; and, that the benefit accrues to the community at large, without incurring the obligation of either equivalent or acknowledgment in return.

Of all the means by which medical science ministers to the general *good*, there are, perhaps, none in which her strength is more imposingly, or more advantageously exemplified, than in the number and variety of her resources "as a branch of legislation;" whether called upon for her aid in connexion with the sanatory regulations of medical police, or appealed to in courts of forensic justice, for those lights, which, while they

guide on the one hand, penal retribution to its proper object, guard with the most scrupulous solicitude on the other against errors and fallacies, by which punishment might otherwise fall on the heads of the innocent; or when, in connexion with the execution of sentence, *it* becomes the *source* whence *clemency* derives its suggestions of mercy; the *authority* on which severity leans for *sanction* and *justification* (32), and the general arbiter in questions affecting the deepest interests of wealth, of title, and of reputation.

So intimate is the connexion of medical science with the administration of the laws, that courts of justice become objects of deep interest to the medical profession, as that profession is one of deep interest in the execution of legal proceedings.

The coroner's inquest, having for one of its objects inquiry into the circumstances connected with every case of sudden or suspicious death, stands, however, in more obvious, though not in more absolute connexion with the medical profession.

Such are the intrinsic merits comprised in that ancient institution, such the importance of the ends to be attained, that the very perfection of its theory, tends to render at once more conspicuous and more lamentable, those practical errors by which it is frequently disfigured, and its objects are often frustrated. A tribunal exercising such important functions requires to have its importance sustained, by calling to the exercise of its responsible duties, men of station corresponding with the powers delegated to them; and their investigation should follow out to its furthest limit, every train of inquiry calculated to elucidate the subject under inquisi-

tion, in order that its decisions may finally have, so far as science and philosophy can supply, the character of infallibility. Amongst the unfortunate examples of defect are those in which medical testimony is *not* so followed out.

It should not be overlooked, that in all inquisitions taken on bodies, the object is to ascertain the true cause of death, and the circumstances under which that cause has been brought into operation ; whether an injury to the deceased, to his family, and to society, has been occasioned either through negligence or through guilt? Hence, the investigation is generally, if not always one of responsibility and difficulty ; the difficulty moreover increases with the improvements of science, and as evil purposes become supplied with resources more subtle, and with means of concealment more secret. Neither is crime confined to the illiterate, but is perpetrated by those who have access to sources of knowledge which admit of criminal misapplication, and in whom are combined the talent and the wicked propensity to apply them to guilty ends ; yet in cases of loss of life, apart from obvious causes, where under the *outward* appearance of *natural* death, the *subtle* and *too successful* agencies of crime may lie concealed, we have the anomaly of inquests and verdicts in the utter absence of medical evidence ; of inferences founded on mere superficial probabilities, and of questions relating to matters of fact, solved, or rather taken to be solved, upon vague speculation and surmise. That death, with all the *appearances* of being natural, may be the result of criminal agencies is a fearful truth, which carries with it the fullest conviction that *no* means should be dis-

pensed with that can contribute, even in the smallest possible degree, to a perfect, full, and finally successful investigation; *not* with the mere object of avenging the wrong, or of punishing the guilty for his guilt-sake, but for the higher purpose of taking from the evil-disposed, the hope of even possible impunity, and of enhancing the protection of life in the highest possible degree.

Death, at all times, when not strictly instantaneous, whether occasioned by violence, by asphyxia, by poison, or by whatever cause, must be looked upon as the result of *disease* produced by such causes; the consequent sufferings, and the disturbance of vital functions for the time being, (however short,) constitute a series of *symptoms*, indicating the *character* of the *injury inflicted*, as the phenomena of *fever*, for example, indicate its *existence* and its *kind*. These symptoms, in the one instance as in the other, it is especially the province of the faculty to comprehend; they are the indications whence the *primâ facie* intimations of the cause of death are to be derived, and it is only by persons conversant with such symptoms and their terminations, that accurate deductions can be drawn. We perceive, however, as if in disregard of this important truth, that outward and mere circumstantial appearances are often relied upon, and this unhappily, the more readily, where bodily ill health has preceded the catastrophe; that evidence of prior disease is not unfrequently, received as proof of death from *that* disease, and, of consequence, by natural causes; but who that calls to mind the craftiness and the wariness, and sometimes the consummate talent and ingenuity of the perpetrators of crime, can otherwise

than tremble at a system which diminishes the safeguard of vigilance where need of protection is the greatest, a system which virtually suggests to the cunning who lie in wait, the opportunity favorable to their guilty designs; which holds out the broad hope, at least, if not the appearance of certainty, that their criminal agents under cover of pre-existing indisposition, may exercise their influence in secret, and that the effects of the poison and of the disease may so *blend* in their operation, that the guilt and infamy of murder may find shelter, under an apparent dispensation of Providence (33).

Upon analyzing "the Returns from the Coroners of England and Wales, of all Inquisitions held by them during the Years 1837 and 1838, in Cases where Death was found by Verdict of Jury to have been caused by Poison," I find,

Of persons who died of medicines given in	}	6
over doses for other medicines -		
Of poisons taken or given in mistake for me-	}	3
dicines - - - - -		
Of medicines in overdoses, not in mistake for	}	30
others - - - - -		

And, in addition to these,

Of children destroyed by deleterious sub-	}	86
stances, at the hands of their mothers, or		
their nurses - - - - -		

In reference to this last appalling catalogue, the coroner for Nottingham*, in his official return, speaking of a preparation of opium, says, it "is given to children to a great extent, and I have no doubt whatever that

* Mr. Brown.

many are yearly destroyed by it in Nottingham, who, dying off gradually, never come under my notice as coroner"(34).

We have, in these records, fearful illustrations of the combined effects of natural disorders and deleterious substances which have not escaped detection; but in how many instances their *united* operations may have terminated in a mortal issue, where *disease alone* has been suspected, forms a subject of the deepest interest, and calling for the utmost circumspection.

An evil next in importance to that of dispensing with medical evidence, is the interdiction of post mortem examinations (35). So subtle are the means by which life may be taken away, so strongly are the malevolent, the vindictive, and the cunning, armed against the unsuspecting and the unwary, that the institutions of the country are imperatively called upon to supply the strongest security and defence. This security and defence are essentially the province of the Coroner's Court, and the base and foundation of these, are the resources of medical science.

Interdiction presents the two-fold evil of abandoning means of information, which, if not always, are at least often, indispensable to the true ends of justice with reference to the individual case; and of debarring the profession from the investigation of phenomena, which, if submitted to timely research, would conduce to improvements, in the study of the general pathology of sudden death. While we lament, on the one hand, that our knowledge of these phenomena is still imperfect, we cannot fail both to lament, and to marvel on the other, that a system is pursued the tendency of which is to perpetuate the imperfection, and the difficulty.

This anomaly is scarcely less to be deprecated than was that from which we have but lately been relieved, when the knowledge of anatomy was deemed indispensable alike to the practice and to the improvement of our art, yet the means of acquiring that knowledge could not be obtained, otherwise than by criminal and punishable infraction of the law.

The pathology of sudden death, the immediate causes, and the immediate subsequent appearances, are studies, indispensable to the perfection of forensic medicine. In the pursuit of this study, the profession is actuated by its wonted zeal; the means are within their view but precluded from their touch; access is forbidden; and a barrier *legally* insurmountable, is interposed, either not to be removed at all, or only after the objects of search have, for all *available* purposes, changed their *identity*; when *effects*, which might have indicated the *cause* of death, are merged in those which are its *consequences*; when characters, which, at an earlier period, had been legible, intelligible, and instructive, have from their evanescent nature ceased to exist(36).

The power of discontinuing this evil, is vested in the important and responsible office of coroner; the obstacle which stands between the knowledge we require, and the means of acquiring it; and between the knowledge we possess, and the application of it to the ends of justice, it is within the authority of that functionary to *perpetuate* or to *remove*(37).

Where obvious causes of suspicion exist, post mortem examinations are had recourse to, at the voluntary instigation of jurors; and the more obvious the suspicious aspect, the more prevalent is the opinion of its

propriety, as if the force of appearances heightened the impulse to pursuit; as if to convict the culprit, almost self-condemned by the grossness and clumsiness of his designs and of their execution, were either a more agreeable or a more honorable duty, or a greater service to society, than bringing out from obscurity and almost inscrutable concealment, the hidden and guilty agents of the more refined and erudite assassin. Examples are not wanting in which juries, in their disregard of the resources of medical science, and in their mistaken but not less culpable reliance on their own unaided judgment, have in oversight and delusion committed the victims of unavenged crime to untimely graves, and permitted successful guilt to enjoy, at least for a time, if not wholly, triumphant impunity (38).

Such humiliating events are disparaging to a tribunal so sacred, and theoretically so excellent, and which can only be deemed to fulfil its object, in proportion as the public mind is justly impressed with the conviction, that its vigilance is *perfect* and *perpetual*.—that it will not be deluded by the outward show of a fair aspect, however specious, nor accept an appearance for a reality, however deeply the deception may lie hidden in seeming security.

I could not without regret, omit to allude, however briefly, to the lives that are restored, and the miseries that are averted, by the happy influence of medical science on suspended animation; nor to recur to the relation that subsists, between “the Medical Society of London,” and that founded for the recovery of the appa-

rently dead. That thousands participate in benefits accruing from the theory on which that institution is founded(39); that the honour of propounding that theory is awarded to Fothergill(40); that the name of Letsom is amongst those of its founders, and that the high gratification of adjudicating the first prize medals of the "Royal Humane Society," was conferred on the Medical Society of London(41), cannot fail to be matter of proud remembrance in connexion with the proceedings of this day.

When we inquire, what in the progress of civilisation, are the sources out of which the sciences are advanced, the mind cultivated, the moral relations fostered, and the social condition improved?—we find that none are more prolific than combinations of learned and scientific men, constituting communities such as that—the 68th anniversary of which we this day meet to celebrate:—and amongst the men whom society may regard as the ministers of future good to future generations, are those who emerge from the universities or schools, and from the honorable observance of their discipline and their respective curricula, imbued with the desire to be students still, conscious that their acquirements are not free from imperfections, and emulous of rendering the knowledge of which they have become possessed, more perfect in its application to the future uses of mankind.

To the "Medical Society of London" we may confidently appeal, as evidence at once, of the attractions of learned communities, and of the successful result of

united talent, incited and cherished under their fostering influence. The advantage of such communities in the culture of medical science, is the more obvious, seeing, that although it must be studied as a whole,—with reference to practice, it owes its improvement to the study and cultivation of individual and specific parts, by individuals of specific pursuits,—as the anatomist,—the physiologist,—the pathologist,—the naturalist, and though last not least in practical utility—the practical essayist,—who, in the wide range of general practice, and in the multitude of his opportunities, (besides adding contributions which are original and his own,) tests doctrines that are novel and ingeniously propounded, and agents that are new and confidently extolled, by the only true and safe ordeal of general experience.

From the general practitioner, in his extensive scope of observation, the contributions made to medical science are invaluable, and every member of our profession, however retired and unostentatious his sphere of action, who gives to the world the true and accurately recorded results of his personal experience, confers upon society benefits of infinitely greater value, than he in his own modest estimation of the means at his command, might deem them to possess.

In the most early periods of time with the history of which we are acquainted, medical knowledge was indebted for its advancement, almost wholly, to those natural incitements which mark the pre-eminence of man in the creation as a social being, and which constitute his distinguishing perfection. Rendered conscious by his powers of observation and reflexion, that the seeds of waste and decay, and of corporal suffering, are inherent

in the elements of his physical nature: compassionate by the influence of sympathy and good-will towards his fellow being; provident, by the gift of forethought and the natural impulse of self preservation; and sagacious by the varied and exalted attributes of his mind, he sought to devise and to administer some means of relief to those whom he found in need;—thus, by the mere force of internal dictates and natural endowments, unaided by the light of collateral science,—unincited by the hope of fame,—uninvited by the allurements of gain,—the good and the wise became the physicians of their time; each in the spirit of philanthropy, pursuing in the solitude of his own individual endeavours, paths which the medical philosopher of the present day, treads in the accessory light of sciences then unknown:—with the prospect of renown as the meed of his ambition,—of gain as the remuneration of his toil,—and in the cheerful fellowship of combinations of men, of similar genius, and similar feelings, pursuing the like high objects for the like beneficent ends.

APPENDIX.

NOTE 1, page 3.

Hippocrates supposed that there existed four fluids in the body—blood, phlegm, yellow bile, and black bile: to those only, the sources of which were obvious, he assigned the right; to the blood, for instance, he assigned the heart, and to the yellow bile, the gall-ducts.

NOTE 2, page 3.

It is said that Hippocrates had once only had an opportunity of seeing the human skeleton, when he published his work on the bones.

NOTE 3, page 6.

It is estimated that the whole of the blood of the body, (averaging in the adult about twenty-five pints,) is propelled by this wonderful machine through the lungs every five minutes, there to undergo a complicated change, even in its rapid transit, by which it receives, from the air inspired what is indispensable to life, and evolves what ceases to be useful to it.

The quantity of air inhaled during five minutes, as computed by physiologists, is two gallons and a half; and a portion of the air of each inspiration, even during its almost momentary sojourn in the lungs, undergoes decomposition to supply to the blood what is indispensable to its vitality; and forms a new compound with the element discarded by that fluid, (as being no longer necessary to life,) which expiration brings away.

The internal surfaces of the air vessels and cells present an immense expanse for the action of the blood and air on each other, and, as the lungs are never completely emptied by the act of expiration, the process is in constant operation.

The lungs are computed to have a capacity of 254 cubic inches, in "voluntary inspiration," (meaning an intentionally full inspiration,) and 135 in natural inspiration: 118 after a natural expiration, and 41 after a forced expiration. The quantity, viz. 118 inches, retained after a natural expiration, deducted from that after a natural inspiration, 135, leaves 17 as the quantity exchanged at each inspiration.

Herbst, (Meckel's Archiv. 1828,) found that adults of large stature, when breathing tranquilly, inspire and expire from 20 to 25 cubic inches; persons of smaller stature 16 or 18. This corresponds with the above estimate.

Sir Humphrey Davy, (whose chest, however, was narrow,) regarded from 10 to 13 cubic inches as the quantity usually evolved at each expiration. Muller, p. 294.

NOTE 4, page 6.

We have an interesting exemplification of local influences on the bodily faculties of the lower animals, in the instance mentioned by Lyell. Some English miners, who were sent by various mining companies to the mines in Mexico, took with them several greyhounds, for the purpose of coursing hares, which are abundant on the Mexican mountains; the dogs were deficient in strength and speed for taking their game in those elevated regions, several thousand feet above the level of the sea, with an atmospheric pressure very considerably diminished, and so different from that to which they had been accustomed; but their offspring bred in these regions, acquired chests and powers of respiration which enabled them to chase their prey with entire success.

NOTE 5, page 6.

During the sojourn in Greenland of Sir Charles Giesecki, professor of mineralogy to the Dublin Society, he saw sucking infants of five

and six months old, while their parents were fishing, take pieces of blubber or stinking fish, and suck and swallow it, both with avidity and impunity. This power of adaptation, however, is not without its limit, and the more especially where the aliment is restricted to one kind. Except in the instance of the nurture of the breast, some variety is, in most cases, necessary.

A dog fed on white bread, wheat, and water, did not live more than fifty days, although another dog, which was fed on brown soldier's bread, did not suffer. Rabbits and guinea-pigs fed on either wheat, oats, barley, cabbage, or carrots, died with all the signs of inanition in fifteen days, while if the same substances were given simultaneously or in succession, the animals lived without suffering any ill effect.

An ass fed on dry rice, and afterwards on boiled rice, lived only fifteen days.

Dogs fed with cheese alone, or with hard eggs, lived for a long time, but became feeble and thin and lost their hair.

This, like all general rules, however, has its exceptions: a cock was fed with boiled rice, for several months, with no ill consequence.

"After an animal has been fed for a long period on one kind of aliment, which, if continued, will not support life, allowing him his customary food will not then save him; he will eat eagerly, but dies as soon as if he had continued to be restricted to the one article of food which was first given."

NOTE 6, page 7.

"Even in the colder regions and within the arctic circles," Captain Scoresby observed "its waters tinged brown, as by a species of minute animalculæ, which, seeking light and heat near the surface, formed a living stratum, not more than a few feet in thickness, but which covered a vast extent of the sea near the coasts of Greenland."

NOTE 7, page 7.

The formidable and distressing attacks of these, in warm damp regions during certain seasons of the year, drive whole tribes of people to temporary migration. Humbolt.

NOTE 8, page 7.

In the vicinity of the pyramids were found, by Hassalquist, a small species of lizard, (the *chondrilla juncia*,) and lion ants innumerable.

NOTE 9, page 7.

Captain Parry observed this in his celebrated northern expedition.

"During the summer solstice, in the high northern latitudes, swarms of mosquitos are produced from which the Esquimaux, the Laplander, and the Samoied are forced to protect themselves by keeping their huts constantly filled with smoke." Mr. Shuttleworth relates, that being occupied in the examination of some red snow that fell at the Grimsel, and expecting to see only inanimate globules of *protococcus nivalis*, he was astonished to find that it was composed of organized bodies, distinct in nature and form, partly vegetable, but the greater number endowed with the liveliest powers of motion, and belonging to the animal kingdom. Among these he named one species *Astasia* (Ehrenb) *nivalis*, and another *Gyges sanguineus*. Microscopic Journal, No. 2, p. 31, quoted from Bibl. Univ. (Ann. Nat. Hist. vol. 5.)

NOTE 10, page 8.

Humbolt asserts that he saw in a cave which had just been opened at Muggendorf the stalactites covered with lichen *trophicola*.

NOTE 11, page 8.

Different species of conferva and ulva have been found growing in boiling springs, by Forskal in Arabia, Barrow at the Cape of Good Hope, and Hooker in Iceland, &c.

NOTE 12, page 8.

Several new microscopic forms of plants have been described by Thienemann as existing in snow. Microscopic Journal, No. 2, p. 25, from Valentin's Repertorium, translated and communicated by Dr. W. H. Willshire.

Of vegetation in the midst of intense cold, we have examples in a minute species of supposed alga, which, in some places, reddens for miles the surface of the snow whereon it grows, as on the coast of Greenland and other arctic countries,

It appears that there is doubt however, as to whether this is truly a vegetable production.

According to the translation of a paper from Wiegman's Archiv. (Heft. 1, 1840,) entitled "On red and green Snow, by the late Prof. Meyen; it appears that M. Ch. Martius, * * * is of opinion, that the colouring matter of the red snow, *Protococcus nivalis*, and of green snow, *P. Viridis*, are one and the same plant, only in different stages of developement."

"Prof. Meyen, however, considers it to be still a question, whether the colours of the snow are really produced by different states of the same species; but he has no doubt but that the said so-called Protocci belong, not to the vegetable but to the animal kingdom, being true infusoria." Microscopic Journal, vol. 1, p. 96.

The red appearance of snow, depending upon the *Protococcus nivalis*, differs entirely from the red colour observed by Captain Parry on some occasions, where the feet of his men or the bottoms of the sledges left impressions on the snow. "This phenomenon was probably caused by a certain degree of transparency, which the surface snow possessed, in consequence of

having been previously melted, and which allowed the transmission of the red rays alone through the parts forming the edges of the footsteps and sledge-tracks. The great obliquity of the sun's rays in so high a latitude favoured the production of this effect. A most interesting paper written by Count Xavier de Maistre, on the colour of the atmosphere and deep water, suggested this explanation." Vide Jameson's New Philos. Journal, July, 1833. No adequate explanation is given in the published account of Captain Parry's attempt to reach the North pole over the ice.

NOTE 13, page 8.

Scheuchrer and Pallas observed plants and animals in sulphureous springs.

NOTE 14, page 8.

Sir Joseph Banks attempted to raise the *arenaria verna* in his garden, but was obliged to send to the mines for a quantity of its native lead rubbish, which, being put into a pit made for that purpose, soon became covered with the plant.

The circumstances under which vegetations, in many instances, develop themselves, are peculiar and unintelligible. "After the great fire of London, for example, in 1666, the whole surface of the devastated city was, in a short time, covered with a luxuriant crop of the *sisymbrium iris* in such profusion that the whole of the rest of Europe was supposed not to contain so many specimens of the plant."

NOTE 15, page 8.

Dr. Graves speaks of having, in traversing the highest accessible regions of the Alps and Pyrenees, "met with flights of butterflies migrating from some neighbouring valley," and quotes a remark of M. Ramond, (*Voyages au Mont Perdu*), "Durant cette inaction qui devenait d'autant plus pénible qu'elle se prolongeait davantage,

la mouche apiforme vint se poser auprès de moi et nettoyer ses petites ailes dont nous étions réduits à envier la puissance !” De Luc, Saussure, and Humbolt have seen insects at heights greater than that of the summit of Mont Blanc ; and the condor has been seen by the latter, far above the highest peak of Chimborazo, where the barometer would have sunk below ten inches.

NOTE 16, page 9.

According to an incident detailed by Captain Scoresby, it might be inferred that the sea is not unfavourable to marine life, at a depth even much beyond the limit to which light is supposed to penetrate. That author says, “ the line of the first fast boat had been for some time at the bottom, and on its being hauled in, several fine specimens of the beautiful species of star fish, *asterias caput medusæ*, were found clinging to it. The depth of water here was about 250 fathoms.” These data, however, are liable to fallacy, and, as remarked by Dr. Graves, “ these specimens of star fish are described as being extremely beautiful ; that is to say, their colours were strongly marked and of great brilliancy. Reasoning from analogy, it would appear to be very unlikely that such distinct and brilliant colours could exist in these animals, if they had been born and spent their lives at so great a depth from the surface as 250 fathoms.”

Biot, as quoted by Pouillet, speaks of fishes which usually live at a depth of from five to six hundred fathoms, but there are not any known species of fish without eyes, and the natural inference is that they inhabit regions of light. Fish which are known to live at great depths, are found to have extraordinarily large eyes, as, for example, the *pomatomus telescopium*, found near the coast of Nice.

De la Becke remarks, as a “ curious fact,” that “ all the molusca known to us have been found, with, perhaps, a few rare exceptions, with living animals in them, in depths less than one hundred fathoms.”

The curious result of Mr. Edwards’s experiments on tadpoles, shewing that if they are entirely deprived of light, although nou-

rished with proper food, and supplied with proper water, their development becomes arrested, and they grow enormous tadpoles instead of frogs, is not definitive as to the necessity of light to animal existence. Life and growth continued although the form was altered, and we find, according to the observations of Ehrenberg, that although light is favourable to the production of infusoria, it "is not absolutely necessary, for they are found in deep mines, such, for example, as Schlangenberg, Fribourg, &c." (*Microscopic Journal*, No. 2, p. 20.) With reference, however, to the contents of waters, found even in the deepest caverns, there is room for precaution, as currents frequently descend to great depths from upper regions of the earth which are accessible to both light and air.

In reference to this subject, besides the influence of light, the quality of the air contained in water, at great depths, and the immense pressure of the water are also subjects of interest. Whether air contained in very deep water is of a quality to sustain animal life is doubted, although fish taken at great depths contain air in their swimming bladders, of which oxygen forms a very large proportion, (ninetenths;) and, in those taken in shallow waters, the nitrogen is almost pure: the reason of these varieties, however, is an unsolved problem. Dr. Graves thinks that we should rather attribute the relative proportions of the constituents of air as found in the swimming bladders of fishes, not to the composition of the air, combined with the water at any given depth, but to the secreting power of the air bladder itself.

The power with which all fish are endowed, of enduring pressure in various degrees, is very considerable; in some it almost surpasses our imagination as well as our comprehension, and when the inevitable pressure at certain depths is calculated, it is presumed that, at such depths, life could not be sustained.

A man descending in a diving bell presently becomes sensible of inconvenience from increased pressure, a pressure which, at 32 feet below the surface, is double that to which he is accustomed, viz., a column of water in addition to the column of atmosphere. De la Beche remarks, that "a creature living at the depth of 100 feet would sustain a pressure, (including that of the atmosphere,) of about 60 pounds to the square inch; while one at 4000 feet, a depth by no

means considerable, would be exposed to a pressure of 1830 pounds on the square inch. * * * * We cannot conceive that the same animal could live equally well near the surface and at a depth of 1000 fathoms, more than we should consider that a man would feel himself equally comfortable at small heights in the atmosphere and at an elevation of 30,000 feet above the level of the sea ;" thus, the whale when harpooned, or when pursued by its enemies, (the narwhal and sword fish,) dives to a vast depth ; the sword fish not having the power of following, awaits his return on the surface. On re-appearing, (weakened by his deep descent, and the unnatural condition into which he has been driven,) he falls an easy prey.

Captain Scoresby observes " that, when attacked, the whale generally dives," and that " when it descends to the depth of 800 fathoms, which it is often known to do, * * * the pressure of the water on the body at this depth, must, sometimes, exceed the weight of sixty of the largest ships of the British Navy when manned, provisioned, and fitted out for a six months' cruize."

NOTE 17, page 9.

Upon the supposition that light is essential to life, then are we presented with the awful contemplation of a great deep of waters, " where the eye of the imagination can only picture to itself a black and desolate mass of fluid," uninhabited and uninhabitable, abiding the lapse, not only of age after age, but of centuries succeeding centuries, in cheerless and unbroken solitude, which no sound pervades, no ray penetrates, and in which no being stirs.

NOTE 18, page 9.

Amongst some curious and highly interesting examples of microscopic parasites recorded in the " Microscopic Journal," is that of the growth of fungi in the *pustules* of *porrigo lupinosa* seen by Schönlein. Translated and communicated by Dr. W. H. Wilshire, No. 2, p. 25.

There is also, in the same Journal, an interesting abstract on mete-

oric paper. "The microscope has been ably employed by Ehrenberg to determine the composition of the meteoric paper of 1686, and which, he states, is a product of *confervæ*, and *infusoria*, now existing on our globe. According to this author the substance, known by the name of meteoric paper, and which fell near Randen, in Courland, in 1686, is formed of filaments of *conferva crispata*, thickly matted together, with the remains of a nostic, twenty-nine well preserved species of *infusoria*, and the cases of *daphnia pulex*." Ibid.

NOTE 19, page 16.

In a country where dissolution and putrefaction are nearly simultaneous, the custom, enjoined by the Hindoo religion, that, as soon as death has taken place the body shall be burnt on the banks of the Ganges, and the ashes, with the funeral pile, committed to the "sacred stream," is obviously salutary in its character: but the body is now often placed in a slovenly manner on a small hurdle, and, when little more than scorched, is pushed off from the shore, "there to float until it arrives at the ocean, unless it be previously picked up by a shark or alligator, or, which is frequently the case, dragged ashore by pariah dogs, and devoured by them in company with a numerous train of carrion birds of various descriptions. From 100 to 150 of these disgusting objects may be counted passing any one point in the course of a day, and, in some places where eddies prevail, a whole vortex of putrid corpses may be seen circling about for hours together. Each tributary stream brings its proportion, the inland inhabitants having recourse to that which is nearest to their village." *Influence of Tropical Climates on European Constitutions*, ed. iv. p. 48.

NOTE 20, page 16.

"The ground springing a little as it approaches the coast, prevents the body of water from rushing at once into the ocean; it therefore dis-embogues itself slowly through a multiplicity of channels that intersect

the great Indian Delta or Sunderbunds in every possible direction. This check keeps the plains of Bengal overflowed from the latter end of July till the middle of October, during which period, noted cities, populous villages, exalted mosques, and stupendous pagodas are seen just above the level of this temporary ocean, surrounded by innumerable boats, now the habitations of domesticated animals. At this time vessels, even of 100 tons, are beheld traversing the country in various routes, wafted by a breeze that seldom shifts more than a point or two from south. The depth of water during the inundation varies from ten to thirty feet, according to the undulations of the ground." Ibid.

NOTE 21, page 17.

According to a table formed by Dr. Clark, the average thermometrical heat, on board the Talbot indiaman, in Madras roads, from the 24th July to the 23rd August, 1771, was 91° , on some occasions it rose to 96° . Clark on Long Voyages, page 56. The author of "The Influence of Tropical Climates on European Constitutions," remarks that he has seen the thermometer stand at 105° Fahrenheit, at midnight, and that too on board a ship riding at anchor in Masoolipatam Roads.

NOTE 22, page 17.

Mr. Curtis, speaking of the coast of Coromandel, says, "Except for two or three weeks about the shifting of the monsoons, especially that which happens about the month of October, a shower of rain or a breeze are almost unknown; scarce ever a haze or cloud appears upon the horizon to mitigate the dazzling ardour of an almost vertical sun, and the thermometer, *through the whole twenty-four hours*, seldom or never points under 80° of Fahrenheit, but generally far above it."

NOTE 23, page 17.

"At that time the soil, in hardness, resembles one continued rock, and is fissured every where with deep chinks. When we encamped in the Delta, it was impossible to drive a tent pin into it, except by fixing it in one of the openings; and the detached clods lying around were hard enough to be used as mallets." Dewar on Dysentery in Egypt, p. 3, 4.

NOTE 24, page 18.

Dr. Dewar remarks, in reference to Egypt, that "intermittent fevers prevail, during the decrease of the Nile, in houses surrounded with stagnant waters. At other seasons they are confined to places in the neighbourhood of extensive rice grounds, such as the town of Damietta." Dewar on Dysentery in Egypt, p. 5.

NOTE 25, page 23.

This devotedness was not without its exception, yet we see in the result of the exception, proof of the rule. One celebrated physician, in extensive practice in London, at the time of the great plague, retreated when the pestilence began to set-in thick around him, *but he never after got the better of the jeers of his medical brethren.*

NOTE 26, page 24.

Of the advantages of ventilation we have an instance referred to by Mead,—“The plague in 1636 began with great violence, but leave being given, by the king's authority, for people to quit their houses, it was observed that not one in twenty of the well persons removed fell sick, nor one in ten of the sick died.” Discourse on Pestilential Contagion, &c. p. 36.

The mode of laying out streets and of building, although still very defective, has greatly improved since the great fire of London, 1666. The streets were narrow, crooked, and terminating often at right angles in other narrow streets, the houses of which were continuous on the side opposite to the junction, thus presenting a hindrance to ventilation. Narrow allies and cul-de-sac courts were common. The houses built of wood were of confined size; the windows small, ceilings low, and it was usual for each story to overhang that beneath it, thus almost closing the upper part of the street. As most things are relative, we may judge of the low grade of domestic comforts and cleanliness in the dwellings of the poor, by the moderate degree of advancement in luxuries, and niceties observed in those of the rich. According to Hearner, referred to by Heberden, the floor of the presence chamber of Queen Elizabeth, in Greenwich Palace, instead of being covered with a carpet, was strewed with hay.

In the second series of "Nash's Mansions of England in the Olden Time," (view—Hardwicke, Derbyshire,) is a fine representation of the Presence Chamber: "at the end of the room is represented the canopy or cloth of state, under which the noble owner sat to receive his guests on great occasions; in preparation for such a visit, the servants are represented strewing rushes over the earth floor, under the superintendence of the steward."

How futile were the means formerly used, as "firing of guns," and making "numerous fires in the towns infected," (by which latter means it is said Hippocrates preserved Greece from a plague which was entering into it from Ethiopia, (Galen de Theriac, cap. 16.) we are well aware. Of the futility of burning fires; we have an edifying example recorded by Dr. Hodges. "Fires were kindled in all the streets, but, alas, the controversie was soon decided, for before the three days were quite expired, the heavens both mourned so many funerals and wept for the fatal mistake, so as to extinguish even the fires with their showers * * * * and the most fatal night ensued, wherein more than 4000 expired. Loimologia, p. 20.

NOTE 27, page 24.

Graunt observes—"It is true there were bills before; viz. 1592-93-94, but so interrupted since, that I could not depend upon the sufficiency of them. * * * * I believe the rise of keeping these accounts was taken from the plague; for the said Bills, for ought appears, first began in the said year, 1592, being a time of great mortality! and, after some disuse, were resumed again in the year 1603, after the great plague happening likewise." *Natural and Political Observation*, by Jno. Graunt, edition 1, p. 4.

"The weekly bills of mortality * * * had their rise on the 21st of December, 1592."

"In 1594, the particular or weekly account of christenings and burials was first *made public*, as also the general yearly account, until 18th of December, 1595, when it was discontinued upon the *ceasing* of the plague." Preface to *Collection of the Yearly Bills of Mortality*, p. 8.

It appears that the bills of mortality were originally intended to record, of the total number of deaths, the number that died of plague. "The London Remembrancer," (founded on the bills of mortality, and published by Mr. Jno. Bell, Clerk of the Company of Parish Clerks,) was "a true account of every particular week's christenings and mortality in all the *years of pestilence*, within the cognizance of the bills of mortality." Preface to *Collection of the Yearly Bills of Mortality*, p. 8.

We see also, by the above abstract, that the bills were discontinued, (viz. in 1595,) *upon the ceasing* of the plague.

The specification of other diseases than the "plague did not take place until 1629." "In 1629 was inserted an account of *diseases and casualties*."

The bills of mortality in this country existed prior to any similar register in Paris. "The bills of mortality are of some standing in England, in imitation whereof the like are now established at Paris." Middleton, art. Mortality.

NOTE 28, page 24.

Although, after the year 1679, the plague ceased to appear, the name of plague was still retained in the catalogue of "Diseases and Casualties," until 1704, but, happily, it is found during the whole of that period with the arithmetical cypher (0) in the column of numbers.

In 1705 the name was finally omitted, and 162 years have now elapsed, providentially, without occasion for its being used.

During the last nine years in which cases of plague occurred, the highest number during any one year was five. In three of the years there were two only in each year, and, in two of these instances, the cases were in different parishes. In one year there was one case only. The total number from 1601 to 1769 inclusive, was 188,571.

Notwithstanding the vastness of these devastations amongst the people of London, they were quickly replaced by fresh supplies from the country. "The high notion which country traders hold of the wealth of London, carries them with wings thither upon the first news of the ceasing of the plague, and of vacancies wanting to be filled in this metropolis, at the same time the new demand for common manufacturers and labourers, to replace those who have been destroyed, brings a vast conflux of these people to London, of all which some few, especially of the traders, being married, are followed by their wives and children: and others, of all sorts, seeing opportunities of settling in constant livelihoods, immediately marry and take possession of the deserted shops and stalls of their predecessors." *Observations Political and Natural*, by Corbyn Morris, p. 90.

"* * * After the plague in London, in 1603, (which carried off 30,561,) the old amount of married adults was completely replaced there long before the end of the first year after." *Ibid.* p. 91.

NOTE 29, page 24.

According to Sydenham there were carried off, by dysentery, for thirty years after the great plague, in 1665, 2000 persons annually.

NOTE 30, page 24.

We have a strong exemplification of the diminution of intermittents, in the numbers of cases received formerly into the Westminster Hospital, and of those received at a later period ; they present this contrast:—

A. D.	Total of Intermittent Fevers.	Total of other diseases.	Proportions.
1720	108	22	1 in 5.
1721	277	41	1 in $6\frac{1}{2}$.
1722	333	45	1 in $7\frac{1}{2}$.
1723	270	35	1 in 8.
A century later, viz. 1813	2	762, including 30 of continued fever.	381 to 1.

NOTE 31, page 26.

I some years since knew a young man, who, at about the fifth year of his age, lost entirely both his sight and his hearing from the small pox; he was intelligent and had an active and inquiring mind. Prior to this dreadful calamity he had acquired a knowledge of the alphabet and had been able to read a little; after the privation, his family communicated with him by means of letters cut in tin, (each somewhat less than a playing card,) these were put into his hand in the proper succession to form words, and thus a slow kind of conversation was held. When any town or village in his neighbourhood was to be spoken of—a figure, as, for example, 9, or figures, as, for

example, 12, were put into his hand to indicate the number of miles that the place was distant, and he rapidly named places by guess until he mentioned the right. Short words and words in constant use, as yes, no, &c., were indicated by touching him on different parts, as the face or arms or chest; his truly lamentable and cheerless condition, however, induced a state of despondency, under which he unhappily died by his own hand.

NOTE 32, page 30.

In addition to the ordinary pleas in bar of execution, we may recollect that in cases of punishment, whether civil or military, the *responsibility* of remitting or of inflicting punishment, is cast upon a member of the medical profession, whose duty it is, in the army, in the navy, and in prisons, to watch the progress and to judge of the effect of the infliction upon the constitution.

NOTE 33, page 33.

However little reason there may be for considering that secret poisoning is had recourse to in this country, it, nevertheless, may be in accordance with a sound, rather than with a partial view of that subject, not to overlook the admirable remark of Dr. Duncan, jun., that "it is not because we know less but because we know a great deal more than our ancestors, that the art of secret poisoning seems to be lost."

NOTE 34, page 34.

The deaths by poisoning, according to the report referred to, were:—

In Lincolnshire—total, 46; of these 25 were by opium or by opiates; of the 25, 11 were children.

In Nottinghamshire—total, 20; of these 16 were by opium or by opiates; of the 16, 13 were children.

According to a Paper on the Statistics of Poisoning in France, (published in the *Journal de Chimie Médicale* by Chevallier and Boys de Loury,) in 81 cases, the poison was given in four instances in medicine. Beck, 5th Ed. p. 688.

In the case of Sir Theodosius Boughton, the guilty projector of his death, (a near connexion by marriage,) who was a man of *education* and *research*, had recourse to a *scientific work* for information and assistance in his diabolical design; to a *scientific process*, (distillation by means of a small still in his possession,) for preparing the murderous potion, (laurel water;) and availed himself of the circumstance of Sir Theodosius being *under medical treatment*, to substitute, for an aperient draught, the deadly poison. It was administered by an innocent hand, and for some time, disease, and not poison, was supposed to be the cause of death. It is a curious circumstance that, "in the library of the murderer, there happened to be a single number of the 'Philosophical Transactions,' and of this single number the leaves had been cut only in one place, and this place contained an account of the mode of making laurel water by distillation." Burnett's Medical Botany, vol. ii.

NOTE 35, page 34.

Beck remarks, that "Every inquest involves a medical question, and even although the case may, at the first glance, appear so clear, and the facts so certain, as hardly to need a professional examination, yet before the trial is ended there will often be *extreme regret that a medico legal dissection had not been pursued.*" Beck's Elements of Medical Jurisprudence, 5th ed. p. 483.

In the event of vessels being lost at sea under circumstances not compatible with the ordinary course of events, underwriters do not fail to institute rigid and critical inquiry into the fitness of such vessels for the voyages in which they have been employed, as it regards their seaworthiness, their capabilities of tonnage, and their general outfit, with all other circumstances affecting their responsibilities; nor do they fail to call to their aid the evidence of *practical* persons versed in the *experience* of those particulars to which their inquiries tend.

In suits at law, where the terms of contract for any building or buildings, machinery, or other works, may appear not to have been fulfilled, engineers, architects, and mechanics are consulted, and none *presume* to decide on the quality of materials, the mode of their combination, their relative strength, or the *cause of their failure*, without the skill and experience of men PRACTICALLY acquainted with each particular and individual department.

We frequently have, in the course of legal proceedings, plain, practical examples, of the necessity of experienced witnesses where accurate discrimination is required, even in reference to investigations that appear simple and easy, and plain proofs of the just views entertained and acted upon on such occasions.

At the examination of Richard Gould, alias Arthur Nicholson, John Jarvis, and Mary Ann Jarvis, at the Police Office in Hatton Garden, before Mr. Coombe, Mr. M'William, and numerous other magistrates, for the murder of Mr. Templeman of Pocock's Fields, Islington, it became desirable that a piece of wood should be identified by comparison with another piece, from which it had been cut by a saw; one of the magistrates examined it, but could not give a decided opinion upon it. Mr. Coombe suggested that it should be examined by some *turner* or tradesman who could give a *decided* opinion.

NOTE 36, page 35.

In the important and extremely interesting case of Sir Theodosius Boughton, the means of strengthening the evidence by post mortem examination was lost, as is exemplified in the following abstract of answers returned in the course of the trial, by medical witnesses, amongst whom was the celebrated John Hunter, whose testimony throughout is practical, and logical, and given with his characteristic clearness, fidelity, and conscientious caution.

Dr. Rattray.

Q. Are you, from those appearances, confirmed or otherwise in the opinion you have given?

A. Confirmed in it so far as, upon viewing a body so long after the death of the subject, one can be allowed to form a judgment upon such appearances. Paris & Fonbl. Appendix, part iii. p. 252.

Mr. Bradford.

Q. We have heard from Dr. Rattray that you did not proceed any farther.

A. The body was so extremely putrid that I declared my opinion to Dr. Rattray that the proposed inquiry could give no sort of information. Ibid. 262.

Mr. John Hunter.

Q. Can any certain inferences upon physical or chirurgical principles be drawn from those symptoms or from the appearances, externally or internally, on the body, to enable you in your judgment, to decide that the death was occasioned by poison.

A. The whole appearances upon dissection explain nothing but putrefaction. Ibid. 271.

It is moreover, notorious that there are poisons, which, although of a deadly nature, are generally not capable of being detected in the body at any prolonged period after death. Some poisons being volatile; some undergoing change by absorption, or by the process of digestion; some, as acids, being neutralized by the ammonia disengaged during the decay of animal matter; and some, as the salts of mercury, and other metallic salts, by the action of animal matter undergoing decomposition. In reference to one instance, Dr. Christison says—"In a case of poisoning which I examined here, along with Mr. Newbigging in 1823, none could be detected, although strong moral circumstances left no doubt that" (a poisonous drug) "had been swallowed seven or eight hours before death." Examples of this kind are numerous in which every hour of delay diminishes the probability of detecting either the poison or its effects, tends to destroy the force of medical testimony, and to afford shelter and security to the perpetrators of crime. To the

course of justice delay is a fatal stumbling block, to the criminal it is a protective boon.

Our ancestors appear to have been guided by a sound discretion in the laws they enacted to prevent (on the part of the coroner and others, in holding, or causing to be holden inquests,) such delays as might afford time for the changes consequent upon decomposition, laws which recognise the *principle* that every opportunity should be embraced to derive, from inspection of the body, externally and internally, all the evidence that it can possibly supply. "In truth the body is part of the evidence before the jury," so much so that if the jury "see it before and not after they are sworn, a material part of the evidence is given when the jury are not upon oath." Jerv. 28.

In accordance with this principle, and the laws founded upon it, "It is the duty of those in whose houses violent or unnatural deaths occur, to make immediate communication whilst the body is fresh," &c. Salk. 377. 1 E. P. C. 378.

"A jailer or township may be indicted for a misdemeanour, or amersed, if a body, upon which an inquest ought to be taken, be suffered to lie so long that it putrefy before the coroner can view it." Salk. 377. 7 Mod. 10. 2 Hawk. P. C. c. 9, s. 23.

"If the body be not found, or have lain so long before the view, that no information can be obtained from the inspection of it, the inquest ought not to be taken by the coroner, unless he have a special commission," &c. 5 Rep. 110. 2 R. Abr. 96. The inquiry ceases, "in such cases," to be within the coroner's jurisdiction, and "application should be made to the magistrates or justices authorized to inquire of felonies, &c., who, without viewing the body shall take the inquest by the testimony of witnesses." 5 Rep. 110. 2 R. Abr. 96.

"Indeed it would seem that coroners may be amersed for taking up a body that has been buried so long, that, from its state of decomposition, no information can result from the view." 2 Lev. 140.

So essential is it that the inquisition should be taken *while the body is in a condition to furnish evidence* that, in the event of its not being so taken, the inquisition is regarded by the law, in effect, as having

been taken in the *absence* of the body. "The Court will quash an inquisition taken without view of the body; for the view ascertains the cause of death, and is an essential part of evidence; and, in like manner, where, from the decomposition of the body, no information can be derived from the view, the inquisition may be quashed upon an affidavit of the circumstance. 1 Str. 22. 2 Hawk. P.

It may further be observed, that the inquisition should be taken, not only sufficiently early for the jury to form opinions as to the general appearances, but sufficiently early to furnish such evidence, as, under proper circumstances, are within the resources of science; and moreover, that the evidence should be submitted to the Court and the jury, by scientific witnesses, upon oath, after due and deliberate examination:—nor should it ever be lost sight of, that the coroner cannot, any more than the juryman, consistently with the exercise of his proper functions, assume the position of a witness. "If a juryman be acquainted with the facts of the case, he should be sworn as a witness, and give his evidence publicly to his fellows in Court." 1 Salk. 405. Styl. 233. 1 Sid. 133. "But the better way is for the party to inform the coroner that he can give evidence upon the subject of the inquiry, in which case it is advisable for the coroner not to swear him upon the jury." Jerv. 229.

The coroner, (whether a member of the medical or of any other profession, or be his vocation what it may,) holds an office the duties of which, on such occasions, are strictly judicial, and, however great may be his skill in any particular branch of knowledge, such skill does not render less necessary the evidence of competent witnesses, even when questions connected with the particular branch in which he may be versed, are embraced in the inquiry.

"Where matter of skill and judgment is involved, a person competent to give an opinion may be asked what that opinion is,—thus an engineer may be called to say what, in his opinion, was the cause of an harbour being blocked up." *Folkes v. Chad*, 3 Dougl. 157. 1 Phill. Ev. 276. 4 T. R. 498. S. C. "Many nice points," observes Lord Mansfield, "may arise as to forgery, and, as to the impression of seals, whether the impression was made from the seal itself, or from an impression in wax. In such cases I cannot say that the opinion of seal makers is not to be taken." *Foulkes v.*

Chad, 3 Dougl. 159. "So the opinion of a ship-builder, on a question of sea-worthiness." Thornton v. Roy. Exch. Ass. Co. Peake N. P. C. 25. Chapman v. Walton, 10 Bingh. 57.

It is required, also, that the proceedings of every inquest shall appear in the *record* of such inquest. "By Stat. 7 Geo. 4, c. 64, s. 4, coroners are bound to reduce to writing the evidence given to the jury before them, or so much thereof as shall be material; to certify and subscribe the same." Jerv. 66.

So jealous is the law on the subject, that even "that statute, according to the commentary of a very learned author, did not authorize the coroner to put down his own conceptions of the evidence, * * * but contemplated that the examination of the witnesses should be taken down with the greatest possible accuracy, as to all material points of the inquiry." Jerv. 31.

Still less does the law contemplate that the coroner shall commit the anomaly of giving evidence himself, or of supplying remarks *founded* on the *facts* of the case, and calculated to have the effect of evidence on the possible issue of the inquisition, yet exempt from the salutary laws to which legitimate evidence is amenable; as the ordeal of counter testimony, and of cross-examination, by the coroner, and jury at least, if not by interested persons and by counsel,—a point in the law of evidence, (notwithstanding the general practice,) which, to use the words of a high legal authority, "may, when the question arises, be a matter of very grave and serious consideration." Roscoe's Dig. 53. 2 Stark. Ev. 278, 2nd edit. 2 Russ. 661.

The duties of the jury, and of the coroner indeed, have been, by legal authorities, very carefully and properly defined. "The jury are to investigate and determine upon their oaths all the circumstances connected with the death of the party, * * * and are for this purpose to receive evidence necessary to establish the fact." Jerv. 228. "They are neither to expect, nor should they be bound by, any specific or direct opinion of the coroner upon the whole of the case, except so far as regards the verdict." Jerv. 225. "The verdict should be compounded of the facts as detailed to the jury by witnesses, and the law as stated to them by the court." Jerv. 226. "Ad questionem facti, non respondent judices; ad questionem legis, non respondent juratores." Vaugh. Rep. 160.

It is not sufficient that the coroner should abstain from directing

upon the faith of opinions expressed by himself, a verdict, the tendency of which is to *inculpate*, and that he would, in *such case*, submit to the jury, evidence which might afterwards be subject to scrutiny in the superior Courts; but it is requisite, also, that the coroner should not, upon the faith of his own opinions, direct a verdict, the tendency of which is *exculpatory*, and calculated to supersede ulterior proceedings.

It is *not* in accordance with the spirit of our laws, *nor* with that of the coroner's inquisition, that the individual who presides, should in matters relating to fact, and not to questions of law, be at once the organ of influential opinions, their sole expositor, and the sole judge of the auto-exposition. It is not assumed by the legislature, that the country must be content to have justice administered in a manner so peculiar, and open to exceptions so grave: neither is the well-being of the community more deeply interested in procuring, upon proper, and none but proper evidence, conviction of the guilty, than in guarding against the possibility of unjust immunity, as the consequence of less vigilant inquiry, and of exclusive and less eligible testimony.

NOTE 37, page 35.

And it shall be lawful for the coroner, either in his order for the attendance of the medical witness, or at any time between the issuing of such order and the termination of the inquest, to direct the performance of a post mortem examination, with or without an analysis of the contents of the stomach or intestines by the medical witness or witnesses, who may be summoned to attend at any inquest. 6th & 7th Will. IV. c. 89, 17th Aug. 1836.

In reference to the grounds upon which juries so often fail to give to the subject of their inquiry the assistance that would be afforded by the skill and experience of the medical jurist, we may, I believe with strict propriety, concede, as one cause, and, I would willingly admit, a frequent cause, the belief, (conscientious, though mistaken,) that the subject admits of no further elucidation than that which general testimony may supply. Another, perhaps still more frequent, originating also in pure and conscientious, though mistaken, principles, is economy.

With reference to the first, I would say that where death may have occurred under circumstances, apart from obvious causes, the instances in which the assistance of the medical jurist would not further, if it did not actually perfect the ends of the investigation, are so few as to constitute extraordinary and rare exceptions to the general rule. It is necessary that we should recollect not only that when a medical question arises, it can be answered only by a medical witness; but that questions may and often do arise, where there is no *obvious* medical connection with the subject of inquiry, in which the *ordinary jurist* sees no point, no discrepancy, no contradiction, between statements that may occur in evidence, and the known laws of the animal economy, of physiology, of pathology, and of post mortem phenomena; while the medical jurist is capable of perceiving at once, in the connection or the anomaly, as the case may be, a clue which properly followed out, may lead to the most unexpected and conclusive results. None but the medical jurist can accurately determine the weight of evidence adduced: whether, for example, that which may be stated to be the *manner* of the persons dying, corresponds with that which may be assigned as the *cause* of death: whether the *time*, at which death may be said to have taken place, corresponds with the *circumstances* under which it is represented to have taken place; and whether the *state of the body* is such as would be the result of death occurring under such circumstances, and with such symptoms as may have been described. Upon this principle we are I think warranted in doubting, whether in *any case*, where the cause of death is *not evident*, the inquisition can be conducted to its legitimate end, in the absence of that experience and knowledge which is possessed only by members of the medical profession, and which the summons of the coroner can at all times command.

With reference to the question of economy, as a motive for dispensing with any aid that might be useful in an investigation at once so delicate, and so important, two observations appear to apply:—

1st. That such immediate saving as might accrue is not true economy, or, in other words, although a saving in individual instances is not a saving in the aggregate.

2ndly. That, although it were true economy, and had the effect of diminishing the aggregate expense of inquests through a series of years, it would be mistaken and unsound in principle.

In considering the position that such saving is not true economy, and, although a saving in individual instances, not a saving in the aggregate, we must not circumscribe our attention within so narrow a limit, as to perceive only the actual cost to any given counties for their *respective* inquests, but we must extend our observation to the *influence* of inquests in reducing the costs to these counties *for prosecutions*; that which tends to diminish the number of prosecutions, is the diminution of crimes in their frequency; and that which diminishes the frequency of crime is certainty of detection; these are the grounds on which the subject of saving, as a question of *true economy*, should be considered.

With respect to the consideration of economy, or *mere saving*, as being mistaken and unsound in principle, the coroner's inquest must be regarded as an institution of protection, and must be judged of on those principles of humanity and civilisation which form the basis of a social state. A system of mere saving, although under the name of economy, cannot, properly, have any place in a consideration of whether we are to strengthen the means of protecting life, on the one hand, or to weaken them on the other. The first step in civilisation, and the first duty which civilised men owe to each other, is mutual protection; and institutions the professed objects of which are protective, should not stop short of the nearest possible approach to perfection. The question of charges in connection with coroner's inquests, agitated in the year 1839, (when, *under misapprehension*, it was imputed to one of the metropolitan coroners, that unusual and unnecessary expenditure had been incurred in the performance of his duties,) was certainly one of an extremely important, and, at the same time, extremely delicate nature.

While it is the duty of the authorities to whose jurisdiction such expenditure is subject, to prevent expenses incurred, either by passive acquiescence on the part of the coroner, in permitting unnecessary inquests, on the one hand, or by interested vigilance in procuring them on the other, it is no less a part of magisterial duty, nor less an exercise of the wisdom and the integrity of purpose, by which the general administration of magisterial authority in this country is characterized, to proceed with extreme precaution, in every measure calculated either to prevent the holding of inquests, or to impede the

full and effectual exercise of the high and important functions of the Coroner's Court.

It is too probable, that impediments must be the consequence of whatever tends to produce in the mind of the coroner apprehensions lest he should be exposed upon slight grounds, and upon mere *primâ facie* appearances, to harsh, suspicious, and painful accusations. In the instance referred to, a comparison apparently invidious, became unfortunately, the only means by which the imputation could be refuted; but to what more unsound, more disparaging, or more degrading alternative can the office of coroner be reduced, than that of an *unseemly competition*, having for its baren object no worthier aim, than a penurious administration of its pecuniary resources;—a minimum sum total of annual expense, under the specious, but false appellation of economy.

To revert to the subject of economy in relation to particular *items* of expenditure, as for example the aids of scientific knowledge, whether we regard the application of that already possessed, or the improvement of such knowledge, with a view to its being rendered more perfect, and more available, in either case, the benefit is a public one, nor does it appear to be otherwise than in accordance with the soundest policy, and the strictest equity, that the *coroner* should *not be required to repudiate* advantages, either present or prospective, from the mere fear of incurring an insignificant public cost.

This is not a question of whether any exclusive branch of science, limited in its application, shall be advanced at the public expense, but whether a branch of knowledge devoted to public objects, available to important public uses, and auxiliary to the ends of an institution, venerable from the antiquity of its origin and from the salutary nature of its objects, may not justly claim a participation in public support.

These are topics in the consideration of which no feelings of pecuniary interests, whether public or private should be allowed to exercise their influence; the decision of what measure to adopt, or what to reject, should have no other advocacy than its own intrinsic merit, and its tendency to facilitate the attainment of indubitable truth and the sacred ends of justice. That economy indeed, which looks to an estimate of *costs*, in comparison with the preservation of hu-

man life, appears to be a sad perversion of human forethought, from the path of a broad, comprehensive, and imperative duty, into that of a narrow, sordid, and miserable policy, unworthy alike of the statesman and the philanthropist.

NOTE 38, page 36.

The wife of a labouring man, (Mary Coates,) "was suddenly taken ill after her dinner, consisting chiefly of gooseberry pie."—"Up to the hour of dinner she was in perfect health; soon after eating, however, she began to vomit exceedingly, while other dangerous symptoms appeared."—"She died within twenty-four hours of eating the pie."—"Both old Swale and the little boy Richard, (the father and brother of Mary Coates,) partook of the pie."—"The boy died, the father recovered."—"An inquest was held on the bodies," (of Mary Coates and Richard Swale her brother,) "on Thursday the 18th, without any adequate surgical examination of the body, when a verdict was returned that 'the deceased died by the visitation of God.' The bodies were, in consequence, interred, and all inquiry for the present hushed." A very curious accident led to further inquiries: "After the funeral, two women, neighbours, were in Coates's house; the pieces of cake and pie still remained, and one of the women proposed to throw them away as they might have been smittled from being in the same house with the dead; the other objected to this as she said they would not hurt pigs and chickens. She accordingly took them with her, and gave them to her poultry in the evening; the next morning, to her horror, she discovered that every one of them, (thirty in number,) was dead."—"Mr. Thompson, surgeon, of Harrowgate, found pieces of cake on the dunghill; and Mr. West, a chemist of the same place, assisted in its examination."—"The result was a strong belief in the latter gentleman's mind, that arsenic was mixed with it. Several of the fowls were next opened and the examination of their crops afforded similar proofs."—"The bodies of Mary Coates and Richard Swales were exhumed, and Mr. Thompson and Mr. Richardson examined them."—"The outer coats of the stomach of both were highly inflamed, but, on their contents being tested, the presence of arsenic was not so conclusive as in the fowls,

the vomiting previous to death having continued many hours; " but, eventually, Coates, the husband, was taken into custody.—*Lancet*, 1828-29, vol. ii, p. 433.

Elizabeth Standring was attacked with symptoms of severe indisposition which continued until she died; during her illness she stated that " she was *quite well before her father had given her some medicine that morning.*" The father said " he had only given her some jalap and treacle which he was in the habit of doing."—" By the death of his daughter the father was entitled to receive several sums of money from burial societies of which she was a member." An inquest was held but no medical man was called in to give his opinion on the case, and the verdict returned was " natural death." Some suspicious circumstances, together with the father with all his family having left the town, led to the disinterment of the body six weeks after the death, a magistrate's warrant having been obtained to exhume the body. By post mortem examination, with the necessary chemical tests, the presence of arsenic was put beyond doubt.—*Lancet*, 38-39, vol. i, p. 103.

NOTE 39, page 37.

During the first 50 years of the existence of the Royal Humane Society—" Upwards of 5000 individuals have been rescued by its direct agency, in the neighbourhood of the metropolis alone, from premature death." 51st Annual Report of the Royal Humane Society.

During the past year—" there have been 214 cases brought under the notice of the society, 200 of which were successful."—67th Annual Report of the Royal Humane Society.

NOTE 40, page 37.

" About the middle of the last century," the penetrating genius of Dr. J. Fothergill " * * * led him to perceive " the fallacy and dubiousness of the received criteria of dissolution;" and, in a paper which he addressed to the Royal Society, he maintained, as the result of his inquiries, " *the possibility of saving many lives without risking anything,*" and " propounded a most important theory, though the

glory of putting it to the test of experiment, was reserved for a later period." 51st Annual Report of the Royal Humane Society.

NOTE 41, page 37.

Dr. Lettsom was appointed by the members of the Medical Society of London, to deliver before them, and the president, vice-presidents, clergy, and governors of the Humane Society, the honorary medals of this institution " (the Humane Society,)" for the year 1788.

The following minutes apply to this adjudication.

Medical Society of London, July 30, 1787.

The following resolution of the Humane Society was laid before the Medical Society by the president, and read:—

Humane Society, July 19th, 1787.

John Davenport, Esq. in the chair.

Resolved unanimously,

That the Medical Society of London be respectfully requested to be the adjudicators of the first prize medals for the best original Essays on SUSPENDED ANIMATION, which are to be adjudged the second week in March, 1788; and that the Registrar transmit this unanimous resolution to the Medical Society, and report their answer to the next meeting of the Humane Society.

Signed by order. WM. HAWES, Registrar.

Monday, July 30, 1787.

At a meeting of the *Medical Society of London*, held this evening,
Doctor James Sims, President, in the chair;

This society having taken into consideration the resolution of the Humane Society, of the 19th of July, relative to the adjudication of the first prize medals for the best original Essays on Suspended Animation, it was unanimously resolved, that thanks be returned to the Humane Society for the honour proposed, and that the polite offer of that society be cheerfully accepted.

Signed, by order,

WM. CHAMBERLAINE, Secretary.

The medals were adjudicated accordingly, at a meeting of the Council of the Medical Society of London, held at the society's house in Bolt Court, Fleet Street, on the 26th day of March, 1788*

The immediate origin of the Royal Humane Society, offers a noble illustration of devotion to the cause of medicine and of humanity, in the generous zeal of Dr. Hawes. "Finding that a strong general prejudice existed against the *practicability* of resuscitation, * * * he determined to *demonstrate* it. With this view he publicly offered rewards to persons who, between London and Westminster Bridges, should, within a certain period from the occurrence of an accident, rescue the bodies of drowned persons, and bring them to places appointed on shore for their reception, in order that the means of resuscitation might be tried. At these places he and his friends restored several lives. During a whole year, Dr. Hawes continued to pay these rewards himself. At the end of this period, Dr. Cogan (by whom the Memoirs of the Dutch Humane Society were translated into English,) "represented to him the injury his private fortune must sustain by such continued expenses, and kindly offered to unite with him for the formation of the Humane Society, which at first consisted of thirty-two individuals." Fifty-first Report. These were Drs. Hawes and Cogan, and their private friends, of whom *six were clergymen*,—

Rev. Mr. Boullier;	Rev. Mr. Snowden;	Rev. Rich. Harrison;
Rev. Dr. Jeffries;	Rev. Dr. Tower;	Rev. Mr. Van Essen.

*The gentlemen present who assisted in the adjudication, were—

Mr. Wadd, Chairman.

Dr. Lettsom, Dr. Sims, Dr. Hart Myers, Dr. Squire, Mr. Ridout, Mr. Hooper, Mr. Hill Hooper, Mr. Chamberlaine, Mr. Jackson, Mr. Dymond, Mr. Hurlock, Dr. Bancroft, Dr. Dennison, Mr. Church, Mr. Clough, Dr. Pendergast, and Mr. Parkinson.

FINIS.



