Part Second.

REVIEWS.

The Cholera, its Origin, Idiosyncrasy, and Treatment. By Ferdinand E. Jencken, M.D., etc. London: 1867: John Churchill & Sons. Pp. 82.

Letters on Cholera. By Thomas Skinner, M.D. Liverpool: 1868: Adam Holden. Pp. 37.

Report on the Cholera Epidemic of 1866 as treated in the Mater Misericordiae Hospital, Dublin. By Drs Hayden and Cruise. Dublin: 1867: Fannin & Co. Pp. 66.

Etude sur le Cholera. Par le Docteur Nicaise. Paris: 1868: J. B. Baillière et Fils. Pp. 55.

Report to the International Sanitary Conference of a Commission from that Body on the Origin, Endemicity, Transmissibility, and Propagation of Asiatic Cholera. Translated by Samuel L. Abbot, M.D., etc. Boston: 1867: Mudge & Son. Pp. 103.

Dr Jencken commences with a history of the development of the world from "a mere nucleus of vapour;" he regards visitations of sickness as arising from "an act of pervasion, the whole system being at once imbued with a destructive ethereal element, which, being too refined to touch the gross organic matter, immediately associates with the plastic ethereal envelope of the organic power, whose equilibrium it deranges, the consequence to the organism varying in accordance with the individual nature of the disease." He has treated, he tells us, fifty cases of cholera, "chiefly among the lower classes," all of which terminated successfully; and the remedies he seems to put most faith in are a single grain of calomel with two or three of charcoal, and as many of sugar of milk, or, what is better still, "a very small dose of arsenic immediately, to indifferentialize the choleraic power," whatever that may mean. Should our readers desire a more intimate acquaintance with his views, we beg to refer them to the work itself, the interest of which we shall not depreciate by further quotations.

Dr Skinner's letters have been reprinted from the British Medical Journal, where they first appeared, and are chiefly occupied with a refutation of Dr George Johnson's theory and treatment by castor-oil. They are purely controversial, and the only novelty to be found in them is, that cholera, as Dr Skinner thinks, is not a septic or blood poison; what it is, and how to treat it, he reserves for some future occasion, possibly waiting till he shall have made up his own mind on these knotty points.

The Report of Drs Hayden and Cruise is in many respects a most
interesting one, and contains a great many important facts bearing on the contagiousness of cholera. The conclusions they have arrived at are:—“1st, The diarrhoea, so prevalent amongst the inhabitants of localities actually suffering from cholera, is a premonition, and the earliest manifestation, of cholera.

“2d, Cholera is a disease strictly preventible by sanitary and hygienic measures, and, in nearly all cases, curable in the stages preceding actual collapse.

“3d, The treatment which we have found most successful in the stage of choleraic diarrhoea is sulphuric acid and opium, with sinapisms, external heat, and creosote-water (for drink, three minims to a pint).

“4th, In collapse we have had more success with calomel given in large doses than with any other medicinal agent. In several cases, besides those in which recovery took place, reaction set in under the calomel treatment, but death occurred in the consecutive fever.

“5th, We believe cholera to be contagious, but in a much less degree than the principal endemic contagious diseases of this country,—viz., typhus, scarlatina, measles, and smallpox.

“6th, As regards individuals exposed to the contagion of cholera, a state of good health, and proper sanitary and dietetic precautions, afford a strong assurance of immunity from attack.

“7th, Immediate attention should be given to derangement of stomach, or laxity of bowels, during a cholera epidemic; and to insure this amongst the poor, house-to-house visitation seems indispensable.”

The other treatments had recourse to in collapse or algide cholera, were one or two ounces of brandy in water every hour or oftener, along with ten drops of tincture of camphor every ten minutes, and chlorodyne and creosote in small doses when the severity of the vomiting seemed to call for them: two tablespoonfuls of a solution of carbonate of soda, with twenty drops of aromatic spirit of ammonia, taken every hour, or every two hours, while effervescing, with the addition of one tablespoonful of lemon-juice: thirty drops of Fowler’s solution at once, and fifteen drops every quarter of an hour afterwards till relief ensued: one drachm of the officinal solution of the permanganate of potass, with ten drops of chlorodyne in an ounce of camphor mixture every third hour, half a grain of extract of belladonna at intervals: ten grains of the hyposulphite of soda, with one drachm of the compound tincture of cardamoms, and one drachm of the syrup of poppies in one ounce of camphor mixture every second hour; subsequently ten drops of tincture of digitalis were added to each draught, on account of suppression of urine; the loins were cupped, and mustard poultices applied. In many of the cases the epigastrium was also cauterized with nitrate of silver. In opposition to Dr Skinner, our authors agree in asserting that cholera is essentially a blood poison. But, perhaps, the most truly important part of their contribution to our knowledge of
the treatment of this disease is the additional force which their experience lends to the view now becoming so generally prevalent among the practitioners of this country, that, by thoroughly carrying out proper sanitary measures, we can effectually limit the spread of this disease, while by early astringent treatment we can with almost equal certainty cure it. These are two points upon which there is a great and a gradually increasing amount of unanimity amongst British medical men; and they are, after all, the points of most importance in so far as regards the wellbeing of the public.

Dr Nicaise has also strongly insisted on the contagiousness of cholera, and on the great importance of checking it in the bud; obsta principiis seems in cholera to be indeed an all-important maxim. He also gives a very full account of the morbid anatomy of cholera. In regard to treatment, there is nothing very novel, and certainly nothing very good from any point of view, in this brochure.

The Report to the International Sanitary Conference is comprised in answers to thirty-three queries, having reference to the origin, endemicity, transmissibility, and propagation of Asiatic cholera. These replies were, most of them, adopted as the unanimous opinion of the Commission; others were adopted only by a majority, the minority dissenting. They may be summed up as follows:—

Cholera originated in India, which is its birthplace, and where it exists permanently as an endemic. Cholera, in Europe, is always an imported disease, is not endemic, and never arises spontaneously; in regard to countries in the immediate neighbourhood of India, these points are still involved in doubt. (In regard to this matter care must be taken to avoid regarding secondary foci, however tenacious in character, as being in any respect of a truly endemic character.) It is doubtful—possible, but highly problematic—whether cholera will ever be able to acclimatize itself in European countries. Cholera does not appear to have an original focus in the Hedjaz (sacred Mohammedan districts). Cholera seems to be chiefly endemic in the valley of the Ganges, probably in only a small number of foci, which it is impossible definitely to indicate, or even to affirm that they have the exclusive privilege of giving birth to the disease. The special conditions, under the influence of which cholera originates in India, and prevails as an endemic in certain localities, are unknown. In India, pilgrimages are the most powerful of all the causes which concur in the development and the propagation of epidemics of cholera. The transmissibility of Asiatic cholera is an incontestable truth, proved by facts which do not admit of any other interpretation; but no fact has yet proved that cholera can be propagated through the atmosphere alone, whatever may be its condition; and it is a law without exception that cholera has never spread from one point to another in a shorter time than was necessary for man to carry it. Man himself is the chief agent in propagating cholera, and a single cholera patient—nay, even a single individual coming from a contaminated place, and
suffering from diarrhoea—may give rise to an epidemic of cholera. The probable period of incubation—that is, the time elapsing from the contracting of the cholera poison to the appearance of the premonitory diarrhoea—does not exceed a few days; all facts tending to prove a longer incubation belong to the class of cases where contamination was possible after the departure from the infected locality. There is no fact known which proves that cholera has ever been imported by living animals; but it is reasonable to regard them in certain cases as possible agents. Cholera may be transmitted by articles in common use coming from an infected place, especially by those which have been used by cholera patients; but these articles can only transport this disease to any distance where they have been closely excluded from contact with the air. No proof exists that merchandise can transmit cholera, but its possibility, under certain conditions, is acknowledged. No conclusive facts exist which prove that the dead bodies of cholera patients can transmit cholera; but it is prudent to consider them dangerous.

Maritime communications are the most dangerous, railroads the most rapid, means of conveying the cholera poison. Deserts are a most efficacious barrier against the propagation of cholera; an importation across the desert from Mecca to Egypt or Syria is unknown. The crowding together of human beings presents a favourable condition for the rapid extension of the disease, but it does not perpetuate itself, however unfavourable the hygienic conditions of the place; its victims never exceed a certain proportion, and an immunity is conferred upon the survivors; so that the more concentrated the mass of human beings exposed to cholera, the more violent the outbreak and the shorter its duration, provided it be not kept up by the influx of unacclimatized persons. Cholera epidemics on board crowded ships are proportionate in intensity to the crowding, and, ceteris paribus, are all the more violent if the men have not previously been acclimatized to cholera on board cholera vessels; the course of such epidemics is ordinarily rapid; and, finally, the danger of the importation of cholera is not entirely subordinate to the intensity or even the existence of cholera symptoms on board during the voyage. The crowding together in a lazaretto of persons coming from a cholera locality has not the effect of producing among themselves a great extension of the disease, but is calculated to favour the propagation of cholera in the neighbourhood. Great gatherings of men (armies, fairs, pilgrimages) are one of the most certain means of propagating cholera; they constitute great epidemic foci, which import the disease into the countries they traverse; but these gatherings, after having been subjected, ordinarily in a very rapid manner, to the influence of cholera, become much less susceptible to its power, and it disappears very speedily, unless new arrivals come to keep up the disease. The dissemination of a compact crowd, at an opportune time, may render less violent an
epidemic of cholera which has appeared in its midst, and even arrest its extension; but this dissemination, on the other hand, gives rise to great danger of propagating the disease, if it takes place in a region as yet unaffected. Twice only, with an interval of thirty-four years, has cholera been imported into Egypt by pilgrims from Mecca; each time the return took place during the hot weather; but as the transportation of pilgrims from Djeddah to Suez by steamboats did not take place till 1858, this infrequency during the past is no guarantee for the future. The hygienic and other conditions which in general predispose a population to contract cholera and favour the intensity of epidemics are — misery and all its results, the accumulation of individuals, impaired health, the warm season, want of ventilation, and exhalations from a porous soil impregnated with organic matters, particularly if these matters come from cholera dejections. Moreover, as experience has shown that the dejections of cholera patients contain the generating principle of cholera, sewers, privies, and the contaminated water of a city, may become the agents for the propagation of the disease. The soil of a locality once impregnated with cholera detritus is able to retain for a considerable length of time the property of disengaging the principle of the disease, and of thus keeping up an epidemic, or even of regenerating it, after it has become extinct. Certain localities, presenting apparently favourable conditions for the development of cholera, yet enjoy a temporary or permanent immunity, in nowise affecting transmissibility, arising from certain local unascertained conditions which present an obstacle to the development of the disease. Certain other localities enjoy relative immunity, more or less pronounced, either originally or acquired, and this relative immunity is always proportionate to the originally good hygienic conditions of these places, or to notable sanitary improvements recently introduced. The victims of cholera, under the most unfavourable conditions, never exceed 20 per cent. of the inhabitants; and an epidemic in which the number of genuine cases amounts to 5 per cent. is a very grave one. A certain number of individuals, therefore, always enjoy a complete or incomplete immunity from cholera proportionate to their vital resistance, variable therefore as that is, and never affording any guarantee for the future. In this respect, apparent vigour is no criterion; vital resistance is not equivalent to muscular energy. A nervous individual—one in whom the nervous relations are well balanced—even of puny appearance, resists morbific influences much better than those colossi who are in reality but badly-balanced phenomena. Cholera attacks by preference populations weakened by misery, and individuals undermined by disease or excess, living in unhealthy localities; while a well-regulated life, and good hygienic conditions, are almost certain guarantees against its action, and may in time be so generalized as to neutralize the effect of transmissibility. We know nothing really as to the exact nature of
the cholera poison; we only know that, originating in certain countries of India, where it dwells permanently, this principle (or poison) is reproduced in man, and accompanies him in his peregrinations, without ever being reproduced spontaneously outside of man. This poison acts like a miasm; and, like that of typhus, rapidly loses its power in the open air at a short distance from its origin, rarely operating beyond a hundred metres (to speak approximately); while, in the vast majority of cases, transmission has only taken place at a much shorter distance. Water and certain ingesta may also serve as vehicles for the introduction into the organism of the generative principle of cholera. The respiratory passages are, therefore, those principally by which the toxic agent penetrates the economy, but the alimentary canal may also admit the poison; there are, however, no facts to show that it can penetrate through the skin. The cholera dejections are incontestably the principal receptacles of the morbific agent; everything, therefore, which may become contaminated with these dejections becomes a receptacle from which the generative principle of cholera may be disengaged under the influence of favourable conditions. The cholera germ is most probably produced in the alimentary canal, to the exclusion, perhaps, of all other parts of the system. This germ or generative principle of cholera rapidly loses its morbific activity in the open air; but under certain conditions of confinement this activity may be preserved for an undetermined period. The premonitory choleraic diarrhoea—which must not be confounded with all the diarrhoeas existing during the time of cholera—never lasts above a few days. Apparently exceptional facts are not free from the suspicion of further contamination.

Here we have a succinct account of the principal facts connected with the origin and transmission of cholera, and we feel certain that every one at all acquainted with the history of cholera will acquiesce in the opinions expressed by the Commission, and may even find in the facts upon which they are based an explanation of some of the phenomena of cholera which have hitherto seemed to him most mysterious and inexplicable. We sincerely wish some equally painstaking commission would undertake the unravelling the very peculiar and remarkably interesting facts connected with the pathology of cholera, after which we might possibly have some rational ideas as to how it ought to be treated; at least we might surely discover whether purgation—we beg pardon, elimination—or the reverse, was most likely to be beneficial. We have our own strong views upon this point, but we have all mankind for brethren; and, irrespective of the advance of medical science, would fain have the treatment of so important a disease as cholera placed upon more certain and less purely dogmatic bases than it now is. Let us, at least, be thankful that the sanitary conference has spoken out so strongly and so favourably in favour of personal, domestic, and national hygienic measures; and of isolation of the sick, and de-
struction of the dejections, which, though not specially mentioned, follows as a corollary from their expressed views. These measures have already saved many; fully carried out, they may even exting-

guish cholera as an epidemic, before we have settled how to treat it as a disease.

A Theoretical and Practical Treatise on Midwifery, including the
Diseases of Pregnancy and Parturition. By P. Cazeaux, Pro-
fessor in the Faculty of Medicine of Paris, etc. etc. Revised and
Annotated by S. Tarnier, Adjunct Professor in the Faculty of
Medicine of Paris, etc. etc. Translated by Wm. R. Bullock,
M.D. Fifth American from the Seventh French Edition. Phila-
delphia: Lindsay & Blakiston: 1868.

The statements just given from the title of this book are, in them-
selves, evidence of extensive usefulness and high appreciation.
This valuable work had for its aim, to be extensively useful; and it
achieved its object before the death of its author. The edition which
is now before us is one well worthy of remark on various grounds,
to some of which we shall, in few words, draw the attention of
our readers. It is a book that would appear to be as much used
in America as in France. It is substantially a good guide—un-
doubtedly the best guide for a French student.

As the author of the work is dead, and as we have already ex-
pressed our general opinion of the work, we shall venture on some
criticism of it which no one will, we believe, misunderstand or
interpret as indicating any variation from the high estimate we
entertain of the value of the celebrated work of Cazeaux.

We are not astonished at the great sale of this book in America.
It will probably never have a great sale here: certainly it has not
hitherto had a great sale. But we think this extensive adoption
of the work by Americans, while it shows their good sense, does
not say much for their own authors. In Germany, the great text-
book and practitioner's guide is Grenser's work, originally founded
on Naegele's Lehrbuch. It has passed through seven or eight
editions. Besides these there are Spaeth's Compendium, and others.
In France the book chiefly used is this of Cazeaux, and they have
Chailly's, Jacquemin's, Joulin's, and others. In Great Britain we
have Rigby's, Ramsbotham's, Churchill's, and Tyler Smith's. All
of these books have many and various faults. Probably Grenser's
is on the whole the best. But be it observed, each nation supplies
itself with obstetric authorship. Each nation has books good enough
to maintain their places against translations of foreign books, even
though the foreign books may be intrinsically far better. Each
nation has a literature of its own, and finds that foreign authors—
and to this Cazeaux's book is no exception—do not do justice to its
literature. Each nation has to a great extent a peculiar way of
thinking, an inner life of obstetric progress of its own, besides a
literary history of progress, and each therefore finds a foreign author,
even when well translated, to be still in many respects a foreign
author. The great future, when science will have no different
aspects for different nations, has yet to be long waited for. Why
then do Americans differ from the French, German, and British
peoples in this respect? We are of opinion that they cannot say
they do not differ in the respect pointed out. They adopt a book
as a text-book which is not of their own production, and which
cannot be said to excel its contemporaries. The work of West on
the Diseases of Children is translated into the chief European lan-
guages, and extensively used; and the reason is, we believe, simply,
that there is nothing to be found in any language at all equal to it.
The use of Bullock's translation of Cazeaux by Americans cannot
be said to rest on a like reason.

We believe that the remarkable success of Cazeaux's work in
transatlantic regions is easily explained. It is a far better work—
very far better—than any published there by an indigenous author.
Meigs, Hodge, Bedford, Miller, and others, are obstetric authors of
considerable merit, but their works are not so learned, comprehensive,
and useful as this of Cazeaux. Americans have too short a national
obstetric history to force them to prefer a native author's work to a
book that is, for them, on the whole, better than any American or
British work. Besides, Americans have, in science, at least in
obstetric science, strong sympathies with the French school, prob-
ably at present stronger than with the British.

But we shall now come to closer quarters with the book, and give
a brief statement of some faults that we find with this excellent
work of Cazeaux. To feel fully the force of these criticisms, we
must remind our readers of the high number of the present edition.
A book of this kind, as it comes to a new edition, affords a fine
opportunity for additions, for corrections, and, lastly, for elisions.
These last most authors have too much self-love to effect, and their
books, if they reach a high number of editions, get destroyed by
additions made without any equally necessary and imperative
omissions. We shall confine ourselves to the first part of the work,
for in that part we have already met with enough to illustrate our
vein of remarks.

We pass over an imperfect and deficient account of the joints of
the pelvis, with ignoring of all recent researches that are not French,
in order to reach something more grave. The new doctrines re-
garding the structure of the ovary, of the young ovisacs being in
the peripheral layer, etc., are connected with the name especially
of Sappey, while the name of Schröne is not mentioned. In a
work published in France, which boasts the name of Legendre
and other homolographic anatomists, we find no use made of this
valuable mode of depicting natural conditions. In discussing the
fertilization of the ovum, and especially the admission of the
spermatozoid into the ovule, we find the name of Keber is not mentioned. We find here such errors as are implied in the following words: "Conception takes place during sexual congress" (p. 119.) In describing the nerves of the uterus, no mention is made of Frankenhaeuser and his work. At p. 153 we have a comparison of the cervix uteri described by Jacquemin, with livid spots resembling wine-les, presented by the vaginal mucous membrane, and with the pigmentary changes in the vulva of some of the lower animals. At p. 156 we have one of those absurd woodcuts which, once introduced, long retain their place. It is not like to anything we know, and very unlike any nipple and areola that ever was seen, and it is this that it is intended to represent. At p. 161 we have a dreadfully long account of kyesteine. If any one will read this tiresome and useless account of a subject declared to be of almost no practical or other importance, and then turns to the subject of twin-labours, p. 375, dismissed with two and a half pages, he will have a vivid conception of what should be elided in this big book, and also of what should have additions made to it. At p. 189, the account of the umbilical vesicle contains no notice of Schulze's work on the finding of the structure in the adult human placenta. At p. 204, and elsewhere, the account of the structure of the placenta contains no notice of the researches of Goodsir, of Schroeder van der Kolk, of Virchow, of Dalton, of Matthews Duncan, of Priestley; but Robin, who has borrowed much (as well as done original work), is everywhere. To judge by this book, the French, and especially Robin, are the greatest microscopical discoverers of the time! At p. 222, discussing the attitude and position of the foetus, our authors give nothing of the views of Simpson, Duncan, Battlehner. We could not expect to have, as yet, those of Cohnstein, and, better still, of Poppel. At p. 229 we have the question of the respiration of the foetus discussed, without reference to the work of Schwarz and recent authors. We miss the subject of superfetation; and on the subject of twin-pregnancy, we have nothing of the valuable researches of Spaeth, of Hecker, and of others.

We might add numerous other omissions, some of them of a grave character. But we prefer to desist, having, we think, given enough to show the imperfections of this work. It is not up to the time even as regards French researches.

We have already said, and now repeat, that it is, on the whole, a very valuable work, and nearly as good a text-book as any that can be got.
DR WERTHEIM'S EXPERIMENTAL STUDIES ON [MAY

_Ueber Verbrennung und Verbrühung. Experimentelle Studien, ange- tellt am Hunde._ Von Dr Gustav Wertheim.

Experimental Studies in regard to Burns and Scalds made upon the Dog. By Dr Gustav Wertheim. A Reprint from the Annual Report of the "Rudolph-Stiftung" in Vienna, for the year 1867.

This pamphlet contains the results obtained by burning and scalding about thirty dogs in regard to,—1st, The local temperature produced by burning certain substances upon the surface of the body; 2d, The manner in which this local increase of temperature extends over neighbouring parts, and the mode in which this increased temperature dies off; 3d, The histological alterations produced locally and generally by burns and scalds. Medium-sized dogs alone were made use of. Some of these were narcotized by the injection of half a drachm of tincture of opium into the crural vein, the others by chloroform inhalations. The latter method was employed when the blood was to be examined, the former in all other cases. The burns were produced by sponging the chest and bellies of the dogs with oil of turpentine, five or ten times in quick succession, setting fire to it each time; the scalds, by pouring over similar parts eight ounces of boiling water nine times in quick succession.

The results obtained were,—1st, All the dogs died, either in a few hours or at the latest after five days. 2d, Excision of a portion of skin, corresponding in position and extent to that burned, had no injurious effect on three dogs on which it was performed. For the first few days the wound was covered with sponge, no attention was subsequently paid them, and the wounds healed most kindly. 3d, In three cases the burned portion of skin was excised, two, five, and fourteen hours after the burning. All the three dogs died twenty-four hours after the burning. This experiment was made before the author became aware of certain alterations in the blood, subsequently ascertained to be the result of combustion. 4th, The original temperature of the bodies of the animals having been ascer-
tained by a thermometer, inserted into the cellular tissue beneath the skin, to be about 95° F., it was found to rise, in consequence of repeated acts of combustion, in one case to 129·2° F., in a second to 147·2° F., in a third to 163·4° F., and in a fourth (a case of scalding) to 132·8° F. These considerable differences depended entirely on the amount of combustible material employed. The experiments themselves show that each new application, when made while the increased temperature already produced still lasted, was always followed by a fresh increase; and there is no doubt that even the highest temperature obtained might have been far exceeded, as it was very far below that requisite for the decomposition of the tissues (which for fat, for instance, is 472° F.). It was not desired,
however, to produce such an excessive rise of temperature, as this most certainly would have speedily killed the animals.

The temperature diminished more rapidly at first than subsequently. This of course depended upon a similar condition of the surrounding parts. In one case one hour, and in a second half-an-hour, was required to restore the normal temperature.

About two inches distant from the burned spot, the temperature of the animal continued normal throughout the whole experiment. 5th, The histological alterations found on the burned patches were,—carbonization of the horny and partly of the Malpighian layer of the cuticle; integrity of the papillae, with this exception that along the capillaries and in their cellular sheaths there were numerous deposits of melanine in molecules and flocculi; in scalds there was separation in ragged patches of the horny portions of the epidermis, the other appearances being similar to those observed in burns. 6th, When burns or scalds were produced on the dead bodies of animals, the alterations of the cuticle were similar to those described, but the copious deposit of melanine was constantly absent, only trifling traces of that body being found in such cases. 7th, In all cases of death from burns or scalds there was constantly observed in the kidneys that form of degeneration known by the term acute desquamative nephritis, and which our author regards as representing in these cases a "progressive" stage of Bright's disease. After severe burns, etc., blood, or crystals of hemine, were also found accumulated in the Malpighian bodies, the convoluted and straight tubes. 8th, In one case a copious deposit of blood-crystals was found in the capillaries of the arachnoid. In regard to this the author remarks that Max Schultze has already (Arch. f. Mikros. Anat., I. bd. p. 31) pointed out, in his examination of animal blood on a heated slide, that it presents a peculiar aptitude for crystallizing when it has been heated to 140° F., and thus transformed into a varnish-like solution. 9th, The most important result of burning is a constant anatomical alteration of the blood, consisting in the formation of numerous corpuscles, ranging in size from 0·004 m. m. or 0·001 m. m. down to small molecules, which, in colour and in optical and chemical relations, perfectly agree with the red corpuscles from which they are derived, separating from them in consequence of the heat to which they have been exposed. These bodies, found throughout the whole of the animal's blood, are perfectly identical with those observed by Schultze on heating human and animal blood to 125·6° F. and upwards (l. c., p. 26); and this temperature at least was always produced in the immediate neighbourhood of a burn of any considerable intensity. The lapse of some considerable time (one-half to one hour) was also always requisite before the temperature fell to the normal. During this time the blood continued to circulate through the heated parts, undergoing there the described alteration in a constantly increasing ratio. 10th, The narcosis was produced by the injection of tincture.
of opium into the crural vein, when the alterations in the organs of the animal were being investigated. Chloroform was employed when it was desired to examine the condition of the blood. Comparative experiments proved that these narcotic agents gave rise to no phenomena capable of being confounded with those observed as the result of combustion.

RECENT WORKS ON DISEASES OF THE EYE.

(FIRST NOTICE.)

1. Ophthalmiatrische Beobachtungen. Von Dr Med. Albert Mooren. August Hirschwald: Berlin: 1867. Pp. 345. (Ophthalmiatric Observations. By Dr Albert Mooren.)

2. Lectures on the Theory and Practice of the Ophthalmoscope. By Henry Wilson, F.R.C.S., M.R.I.A., etc., etc. Fannin & Co.: Dublin: 1868. Pp. 146.

3. An Improved Method of Extraction of Cataract, with Results of 107 Operations. By J. R. Wolfe, M.D., F.R.C.S.E., etc. With Illustrations. John Churchill & Sons: London: 1868.

4. The Natural and Morbid Changes of the Human Eye, and their Treatment. By Charles Bader, Ophthalmic Assistant-Surgeon to Guy's Hospital. With Illustrative Plates. N. Trübner & Co.: London: 1868. Pp. 500.

The contributions to ophthalmic literature have been of late numerous and valuable. We notice, in the present review, four works, reserving for future remark other four which have been more recently published.

1. Dr Mooren's name has been well known to oculists in connexion with a modification of the ordinary operation for the extraction of cataract. His present work will serve to raise and extend his reputation as a sound observer and scientific ophthalmic surgeon. His "Ophthalmiatrische Observations" are in fact clinical reports founded on 32,425 cases which have been under his care during ten years. The first chapter is devoted to statistics and particulars with regard to his clinique, in which the author congratulates himself—and we must confess with good reason—on the very large number of cases that come to consult him at his institution. It is very remarkable that a town like Düsseldorf, with only 55,000 inhabitants, should possess an ophthalmic hospital (with 80 beds), and treat above 4000 patients yearly, ranking fifth among the ophthalmic hospitals of Europe. This result is no doubt partly to be accounted for by the extreme prevalence of eye-affections among the studious Germans, and by the reputations their oculists have achieved; but it is also, we imagine, to a great extent due to the fact that in Germany ophthalmology is almost univer-
sally recognised as a specialty, and that there patients affected with derangements of refraction or accommodation apply for relief to the ophthalmic surgeon instead of trusting to their own unskilled judgment, or to the advice of the optician, to whom persons so affected in this country generally at once apply for spectacles. In not a few instances we observe the baneful effects of this procedure, the patients having selected spectacles altogether unsuited to their condition.

In looking over the statistical table for the year 1865-66, we observe that above 700 were cases of derangement of accommodation. In the succeeding chapters we have some very useful and instructive observations on the more important affections of the eye, and numerous very interesting cases narrated, some of exceeding rarity. We have not space here to do more than refer to a few of the points discussed by the author. In the chapter on Affections of the Orbit, Dr Mooren relates a case of convergent strabismus, in which the ordinary operation of division of the tendon of the internal rectus muscle was followed by very extensive extravasation of blood into the cellular tissue of the orbit. Six weeks elapsed before the conjunctiva and lids lost all appearance of ecchymosis. We know of only one other such case.

Thirteen cases of anaemic exophthalmos—a disease termed by the author “Morbus Basedowii,” but which, in this country and in France, is usually named after the physician who first described it, Graves—came under observation, and of these twelve occurred in women; only in one case was a cure effected. It was the one case in which the disease occurred in a male subject. The cure is ascribed to iodide of potassium, and the introduction of a seton through the skin of the breast. No reference is made to the employment of chalybeates and nervine sedatives in this affection, which remedies are in this country most relied on.

Granular conjunctivitis (trachom) would appear to be almost as prevalent in the neighbourhood of the Rhine as in this country. Dr Mooren considers the conjunctival secretion in this, as in all other forms of conjunctival inflammation, to be infectious, and attributes the prevalence and spread of this disease partly to infection, but as much to other sources of conjunctival irritation, such as the prevalence of dust in ill-ventilated work-rooms, the damp, unwhole-some atmosphere of low-lying, overcrowded dwellings, or the long-continued application of atropine for iritic inflammation. In acute granular conjunctivitis, he found most benefit from the administration of saline purgatives, with, in certain cases, the application of several leeches, or the formation of a blister behind the ears. Locally the use of cold-water compresses is generally grateful to the patient, unless an oedematous condition of the lids exists, when warm fomentations are to be preferred. When the acute stage is over, the cautious employment of modified lunar caustic, or sulphate of copper at regular intervals, is recommended. The prognosis in such cases he considers to be favourable in
proportion to the extent of the conjunctival fold which intervenes between the upper lid and the globe.

Sympathetic ophthalmia is very carefully considered. During the ten years, 96 cases came under observation; of these 37 ended in complete blindness. The following were the conditions in the primarily-diseased eye that in these 37 cases gave rise to sympathetic ophthalmia in the other.

In 12 cases, wound of the sclerotic, involving the ciliary body.

6 cases, atrophy of the eyeball from wounds, in which direct injury to the ciliary body, though highly probable, could not be ascertained.

7 cases, reclination of lens.

4 cases, staphyloma.

1 case, prolapsus iridis.

1 case, choroiditis ectatica.

3 cases, atrophy of eyeball following irido-cyclitis, not of traumatic origin.

3 cases, detachment of retina with irido-cyclitis.

In addition to these 37 cases, there were other 4 in which total blindness occurred in consequence of enucleation of the primarily-diseased eye having been too long delayed. In other 20 cases, the sympathetic ophthalmia did not advance (or had not advanced) to total loss of sight, although enucleation had not been resorted to. In these the performance of an iridectomy in the other eye served to improve the patient's vision.

The most important fact, however, is, that 55 cases in which enucleation was performed sufficiently early were all brought to a most satisfactory conclusion.

Dr Mooren states, as the result of his experience, that in all the cases observed tenderness on pressure over the ciliary body was the never-failing symptom which indicated the risk of sympathetic disease. That a simple diminution in the power of accommodation in the sound eye does not in itself signify the commencement of sympathetic ophthalmia; this symptom only becomes important when it occurs in connexion with tenderness over the ciliary body. When these symptoms are present, the only possibility of preserving the sound eye consists in the enucleation of the primarily-diseased one.

On irido-choroiditis, glaucoma, iridectomy, and many other subjects, observations of great value occur; but we shall only shortly allude to his remarks on the different operations for cataract, referring the reader for further information to the book itself.

The number of cataract operations was 897, and many different methods of operating were adopted. Reclination, which he employed at first in some cases, was soon completely relinquished, on account of the unfavourable nature of the results obtained, and different methods of extracting the lens adopted in its place. Dr Mooren
was one of the first to point out the great advantage of combining removal of a portion of iris with the extraction of the lens. The method that he chiefly advocated was the performance of an iridectomy preliminary to the ordinary flap extraction. The iridectomy was performed about three weeks before the extraction of the lens, the portion of iris removed corresponding to the site of the incision for extraction. In some cases, however, the portion of iris was removed during the operation for extraction of the lens; but in all cases in which the prognosis was not very favourable, he preferred dividing the operation into two—first the removal of the iris, and thereafter, when the eye had completely recovered from it, the extraction of the lens. In a few cases he also performed Waldau's scoop-operation.

To the end of 1865 these were the different methods of operating he employed, and the results he obtained led him to the conclusion that a preliminary iridectomy greatly enhanced the success of the operation. The percentage of cures obtained by the ordinary flap extraction was above 93; by the same operation, with a preliminary iridectomy, exactly 93; while, when the iridectomy was made at the time of the extraction, the percentage was 91. When we consider that the cases subjected to the ordinary flap extraction were all picked, while those in which (from diseased state of the eye, unfavourable form of cataract, or unhealthy condition of the patient) an unfavourable result was most to be feared, were subjected to a preliminary iridectomy, we observe at once the balance in favour of the latter operation. In 1865, however, he commenced to perform Von Graefe's modified linear extraction, and the success that has attended it in his hands has been such as to induce him to give up all other methods of extraction. He has performed this operation on 102 eyes, of which he has only lost 3. To exhibit the wonderful progress that has recently been made in the successful extraction of cataract, he introduces a table exhibiting the results obtained by various operators from the time of Daviel to the present day.

Linear extraction through the cornea (for soft cataract) was performed 27 times, and was attended in all cases with success. The operation is stated to have been first employed by Von Graefe. In this, however, Dr Mooren errs, as Mr Gibson of Manchester recommended and performed this operation so far back as 1811.

We welcome Dr Mooren's observations as a most valuable addition to ophthalmic literature, and recommend all specially interested in diseases of the eye and acquainted with German to possess and peruse this work.

2. We have had much pleasure in perusing Mr Wilson's Lectures on the Theory and Practice of the Ophthalmoscope. Mr Wilson has endeavoured to furnish a practical guide to the student whereby he may, without much scientific research, understand the principles on

---

1 By Waldau's operation the percentage of cures was only 68.
which the ophthalmoscope is constructed, and acquire its use. In this laudable endeavour, Mr Wilson has been thoroughly successful. He is generally clear and precise in his descriptions, and, without being too abstruse, treats his subject in a thorough and accurate manner. In addition to the strictly-speaking ophthalmoscopic affections, the anomalies of refraction and accommodation (myopia, hypermetropia, presbyopia, and astigmatism) form the text for one lecture, while the last chapter is devoted to Glaucoma. The diagnosis of these affections is often due to, or at any rate simplified by, the use of the ophthalmoscope, and they may therefore claim a place in such a treatise as this. On glaucoma, Von Graefe's views are shortly and clearly stated; while Donders's views on the anomalies of accommodation and refraction are ably expounded. A very good description of the anatomy of the parts concerned in ophthalmoscopy is also given. There are a very few points on which we are inclined to differ from the author.

When speaking, at page 5, of the examination of the eye by focal or oblique illumination, he states:—"This mode of examination can also be practised by intercepting and concentrating on the eye by the same lens direct beams of sunlight; but the eye is as a rule not very tolerant of such illumination, and sunbeams are not always at command; ordinary diffused daylight does not suffice for the purpose." We need not wonder that "the eye is as a rule not very tolerant of such illumination," when we reflect on the properties of what schoolboys term a "burning glass." The employment of direct sunlight is of course out of the question.

At page 57, he lends his valuable support to what we consider a popular fallacy—that myopic persons frequently improve in their vision with advancing years. Our experience does certainly not tally with this statement; for while the nearest point of distinct vision may in myopes recede somewhat as age advances, the furthest point does not; so that while their power of seeing near objects is not markedly altered, their vision of distant objects does not improve.

We think Mr Wilson is inclined to attribute the muscae volitantes which are so frequently complained of too much to the presence of floating bodies in the vitreous humour. This is, no doubt, the correct explanation in many cases; but, in the majority, no such cause can be discovered. At the same time, we agree with him that they are too often ascribed to "disorders of the stomach."

The lecture on the Optic Nerve is particularly good, and gives a short but excellent account of the results of recent investigation into the connexion between optic neuritis and cerebral disease. The connexion between the abuse of alcohol and tobacco and a form of atrophy of the optic nerve, is admitted by Mr Wilson. He is of opinion that tobacco "acts poisonously on the sympathetic nerve and brain, and even causes functional paralysis; and the optic nerves suffer secondarily, or participate primarily, in the process, and become afterwards atrophic."
There is one word which frequently occurs in the course of the volume—"glaucomatic"—to which we must take exception. As far as we are aware, Mr Wilson is the first to employ that term, while glaucomatous has been long in use; and we see no advantage in the change.

We are sorry to add, that the illustrations are very defective. Notwithstanding, we regard the work as a most valuable contribution, and would commend it heartily, alike to practitioner and student. We hope soon to welcome a second edition with some good plates.

3. We now come to consider a curious work, entitled, "An Improved Method of Extraction of Cataract, with Results of 107 Operations. By J. R. Wolfe, M.D., F.R.C.S.E." The author is, or rather was, "Ophthalmic Surgeon in the Aberdeen Royal Infirmary, and the Aberdeen Eye Institution; Lecturer on Ophthalmic Surgery in the Aberdeen Medical School;" and the work is inscribed to the justly celebrated Desmarres. Appearing under such favourable auspices, this book is entitled to more serious consideration than we would otherwise—judging from its intrinsic merits—have been inclined to award it. This externally attractive work consists of 111 pages, of which 71 are the production of Dr Wolfe, and 40 are the advertisements of books published by Messrs Churchill & Sons. It has struck us before now that these 40 pages of advertisements are of great use to Mr Churchill's minor candidates for literary fame. We doubt not that it has also proved advantageous to that enterprising firm.

Let us dip a little into the book, and judge of its contents. We learn from the preface that this is a réchauffé of a series of papers that appeared in the columns of the Lancet, and which received very favourable notice from the French medical press. His operation he terms "Extraction by Iridectomy and Small Corneo-conjunctival Flap." Before proceeding to describe it, however, he gives a short outline of the history of the operations of extraction, solution, and depression. His description of these operations is, on the whole, tolerably correct. We have next a chapter on Glaucoma. After detailing the symptoms present in most cases of this affection, he proceeds to consider the pathology of the disease. And here we do find something original. We have carefully studied the whole of the brochure, and the one original conception it contains is in this chapter, though there are two other so-called original points, to which we shall afterwards refer. The following is his idea of the pathology of glaucoma:—"More recently, however, in the course of an extensive discussion, I suggested that the whole range of glaucomatous symptoms may be accounted for on the hypothesis that it is the result of hyperesthesia and spasmodic irritation of the sympathetic within the orbit. This will accord with Claude Bernard's experiments on the vaso-motor system. There is, in the first
place, the dilatation of the pupil, caused by the irritation of the sympathetic, which, in junction with the pneumogastric, furnishes filaments to the radiating fibres of the iris; there is also engorge-ment (nervous congestion) of the choroid, which gives rise to pressure upon all the ciliary nerves (both those proceeding from the ophthalmic ganglion to the sphincter iridis and cornea, and those from the nasal nerve); hence anaesthesia of the cornea, vitiated nutrition of the organ, tension of the organ, etc., rendering the phenomena more complex, and the ensemble tending to inevitable blindness." We must first take exception to the statement that the sympathetic, in junction with the pneumogastric, furnishes filaments to the radiating fibres of the iris. As far as we are aware, no connexion whatever has yet been traced in man between the pneumogastric and the iris. No doubt, in dogs, the cervical sympathetic and pneumogastric are in close contact; and in experimenting on the effects of division of the sympathetic in these animals, the pneumogastric is necessarily divided at the same time. Dr Wolfe should have known this. But in cats and rabbits, where these nerves are not so closely connected, division of the pneumogastric alone does not produce any effect on the pupil. But, further, we consider the whole theory utterly fallacious and absurd. Did it never occur to Dr Wolfe that irritation of the sympathetic would give rise to contraction instead of congestion of the vessels? That instead of increased secretion of the fluids of the globe, and consequent increased tension of the eye, there would be the opposite condition? Claude Bernard's experiments distinctly demonstrated that irritation of the sympathetic caused diminution in the calibre of the vessels, and diminished the secreting power of the organs. Bernard, we suspect, would be rather shocked if, in the French medical press, he chanced to meet with the fathering of such absurdities upon his discoveries.

The operation of iridectomy is next described as usually performed. The only peculiarity we observe is in the illustrations, which represent the spring-speculum as applied to the outside of the lids. This is surely a mistake on the part of the engraver, but should have been noticed by the author.

The methods of extraction by Schufl (with the modifications recommended by Critchett and Bowman), Mooren, Jacobson, and Von Graefe, are then considered and commented on, and lead the way to the description of "the author's method." A preliminary iridectomy is made six weeks previous to the extraction. The removal of the lens is accomplished through a flap incision made rather more peripherally than is usual; and so far this is Mooren's operation. But now we meet with originality No. 2; for while in cutting the conjunctiva Mooren used the knife, Dr Wolfe employs a pair of scissors. In all other respects the operation is that of Mooren. A tabular statement of the results obtained in 107 cases is appended, from which it would appear that in 94 the eyes "healed well, with
perfect vision; in 7, the eyes "healed well, but no vision" was obtained; in 2, the eyes "healed well, requiring subsequent operation;" in 4, the eyes were lost.

It is very remarkable that none of the cases are reported to have recovered with partial vision, excepting the two requiring subsequent operation. We rather incline to the belief that some such must have existed, and been included under the list of those recovering with perfect vision. This idea is strengthened by the fact that vision was not perfectly restored in, at any rate, two of the four cases related as examples. That the operation should have been successfully performed in so many as 7 cases without recovery of sight seems to us to reflect no great credit upon the discretion of the operator.

Originality No. 3 is widely diffused. It consists in a general assumption of operations and instruments. Of this variety of originality we shall give a few examples:—Fig. 8 represents "author's method" of extraction and "author's cataract-knife." Of the operation we have spoken already. The cataract-knife (which was invented by Beer) is, we presume, called the author's, because the woodcut is taken from one in his possession.

Again, in Fig. 7, we find a representation of the author's hook, which to our unsophisticated eye in no way differs from that of anybody else. We might quote further illustrations, but the above may suffice. We consider this kind of originality gravely reprehensible, being calculated to impress uninformed and particularly non-professional readers.

In reading the book we noticed a considerable number of printer's errors, and, in some instances, mistakes in grammatical construction, which should certainly not occur in a reprint. The following, for example, is the description given of the second stage of Schult's operation:—

"2. With the pupil-forceps the iris is seized, withdrawn, and excised. From the slit thus made the cornea is cut through vertically: hence the iris cannot be incised to its periphery, as is done for the cure of glaucoma, but there is left a narrow fringe behind, which prevents the vitreous from prolapsing." And, again, while describing the instruments employed in Von Graefe's operation, we find the following:—"a. is my cystotome, having a blunt convex surface and a sharp edge at its convexity."

What meaning the author intends to convey in these two sentences it is impossible to discover. But these are points of minor importance, and we feel we must apologize for having occupied so much space in reviewing so worthless a work. We, however, considered it our duty to give the grounds for our unfavourable opinion.

4. We turn with pleasure to a work of a very different stamp,—a work which gives us a very high opinion of its author, although it can scarcely be said to come up to our ideal as a practically avail-
able treatise. Among its merits, perhaps the chief is that, though a thorough systematic work, it is no mere compilation, but embodies a large amount of valuable original matter. On the other hand, its disadvantages are, its defective literary style, its injudicious arrangement of material, and the fact that the author, in his descriptions of diseases, very often takes for granted on the part of the reader an amount of knowledge which few practitioners, and almost no students, possess.

We would seek to criticise this work most respectfully, but cannot avoid saying that the chapter on Cataract might have been more complete. We miss an account of Von Graefe's modified linear operation, and of those of Mooren, Jacobson, Pagenstecher, etc.; and of those which are given, the circumstances which render each particularly suitable in special cases are not mentioned. We observe that Mr Bader has employed medical treatment in some cases of cataract, and not altogether unsuccessfully, as the following passage indicates:—"The following is a copy of a prescription used by some Continental oculists for dispersion of cataract:—R Potassii iodidi 3vi. Tincture conii et mixture oleose balsamice aa 5ii. From 12 to 15 drops, to be rubbed over the eyebrows four times daily. I have accurate notes of two patients, one a lawyer, who used the remedy for the last three years, and follows his occupation, which he could not do when I saw him for the first time; and the other a lady, who is much engaged in reading, near work, etc. In both cases the opacities have become whiter and smaller."—P. 285.

In several places allusion is made to interesting and in many cases almost unique cases, but unfortunately no reference is given whereby more detailed information regarding them may be obtained, which detracts from the value of the book as a work of reference. The elevations met with in granular conjunctiva the author divides into five varieties, which we consider too numerous to be of practical importance. We were also astonished to find acetate of lead recommended as a local application in this disease. We would imagine that this application, when the cornea is ulcerated, would be apt to give rise to indelible opacities (of chloride of lead) in the cornea. We were disappointed, too, with the very short reference to the use of inoculation for the cure of pannus, which is the more to be regretted when we consider that Mr Bader has had more experience in the employment of this treatment than any other oculist in Great Britain.

The chapter on Glaucoma we consider particularly good. It gives a very accurate description of the various forms of that disease, and contains a large amount of information evidently drawn from the author's own experience. The chapter, too, on "Anomalies of Vision" is very valuable, as it supplies much information on many points on which most works on eye diseases are either very short or entirely silent.

Along with this work there is a small atlas of illustrations.
Those representing ophthalmoscopic appearances vary considerably in merit, some being remarkably good, others again of a colour which we at any rate cannot recognise as correct. In addition, there are plates intended to illustrate the pathological anatomy of the eye. These are well executed and of scientific interest; but we think, that if in their place a few woodcuts had been inserted to render the descriptions of the operations clearer, the value of the work as a practical treatise would have been much enhanced.

In conclusion, we have only to say that this book will be highly appreciated by all ophthalmic surgeons, and we cannot doubt that an improved arrangement, and a more elegant style, with simplification in the treatment of several intricate subjects, would render it one of the best, if not the best work on the subject.

The Anatomical Memoirs of John Goodsir, F.R.S., late Professor of Anatomy in the University of Edinburgh. Edited by William Turner, M.B., Professor of Anatomy in the University of Edinburgh. With a Biographical Memoir by Henry Lonsdale, M.D., formerly Lecturer on Anatomy. 2 vols. 8vo. Edinburgh: Adam & Charles Black: 1868.

The papers contained in these volumes are the foundation on which Goodsir's fame as a philosophical anatomist must now rest. Like many men of genius, Goodsir was greater than his accomplished work. His writings give clear indication of the nature and extent of his powers; but they show also a large reserve of thought and work which ill health and other circumstances left unperfected and unrecorded. But while we regret that much that is valuable is by his death lost to science, our gratitude is due to the editor for collecting in these handsome volumes the valuable anatomical treatises of the great Professor. Though not all that he could or would have done, they are full of interest and instruction. They establish his position among the foremost anatomists of the present or of any age. During the last thirty years, anatomical science has advanced and extended with a rapidity unparalleled at any period of its history. The discoveries of Schwann not only opened up the entire new field of histogenesis, but gave a fresh impulse and direction to every branch of anatomical inquiry. Embryology, Morphology, Comparative Anatomy, received new principles and methods; and the whole face of physiology and pathology was changed. To become eminent in any one of these departments is the work of a life. It is the extraordinary merit of Goodsir, as shown in these memoirs, that he was a master, a discoverer of new facts, an originator of new ideas in every department of anatomical science.

In the few observations we may have to make on papers, most of which have long ago become classical, but some of which have not
received the attention they deserve, we shall follow the arrangement adopted by the editor.

In the first division, entitled "Lectures and Addresses," are found nearly the latest productions of the author. They treat chiefly of anthropological questions—the relation of man to the rest of creation, and the position and value of the morphological and teleological methods of inquiry. Goodsir advocates strongly that the study of Man should be undertaken from two points of view or by two methods of inquiry—the physical for the somatic or corporeal element, and the psychological for the manifestations of consciousness. He insists on the distinction between the mere consciousness of the animal and the peculiar self-consciousness and higher endowments of the human soul; and in regard to somatic organization, he shows by anatomical details, that, in the comparison of the organized structure of man and the animal, we must keep steadily in view the nature of man's higher conscious principle. In subservience to this principle, the human organism presents in its mechanism a completeness and perfection peculiarly its own.

"The human body presents a whole series of perfected arrangements of structure bearing immediately on the higher conscious or rational principle of man—arrangements which are deficient in all apes alike, and which thus collectively, by their absence, distinguish all the apes from man corporeally, as precisely as their instinctive form of consciousness separates them from man psychically."—Vol. i. p. 265.

The relations of organic to other sciences are thus stated:—

"The organic sciences lie in the boundary between the various departments of physical science on the one hand, and of moral and religious truth and belief on the other. If you agree with me, that when any question in organic science involves an element appertaining to the higher departments of truth and belief, its higher relations should be studied, then you will see and avoid the danger which threatens the higher relations of anatomico-physiological knowledge in the present phase of the science."

He adds further on—

"It would be out of place to enter here into detail as to the influence which Christianity has exerted on man. I would only impress upon you as students of science, that science properly so called had its origin within the Christian era; that its progress is one of the results of Christianity; and, moreover, that one of the greatest dangers to which the Christian system is at present exposed, is the erroneous tendency to elevate science above the other forms of human belief."

These statements will show the great and catholic spirit in which the lectures on Humanity and on Life and Organization are conceived. Every one acquainted with the present condition and tendencies of anthropological science will appreciate their peculiar value. It is well that so able an advocate of enlightened views as Professor Goodsir has brought the weight of his arguments and his authority to bear upon these important questions, in regard to which the dogmatism of so-called science, instead of a reverent search after truth, seems only to aim at wounding the religious
feelings, and assailing the fundamental and essential beliefs, of mankind.

The second division of vol. i. is chiefly occupied with the papers on Comparative Anatomy, of which those on the curiously anomalous Lancelet, and on the Sunfish, are best known. Two others, on the Thalassema and Echiurus, and on Pelonaia, a new genus of tunicated molluscs, were written in conjunction with his intimate friend Edward Forbes. It is remarkable that the papers in this department are so few. Comparative anatomy was, if any preference existed, Good sir’s favourite subject. His study of it was deep and extensive, and the University Museum attests the labour he devoted to it. It is well known that his large stores of information found occasional exposition in his lectures, but it would seem that no permanent record of them has been kept—no outline of a system into which his materials had been elaborated. It is here that, in point of extent, the writings he has left give but a partial and inadequate notion of his acquisitions or his powers.

In vol. ii., the first division, comprising Development and Morphology, commences with the celebrated memoir of the “Origin and Development of the Pulps and Sacs of the Human Teeth.” This is the most elaborate and most finished of Good sir’s papers. Published in the Edinburgh Medical and Surgical Journal in 1839, it at once established his reputation as a profound and original anatomist. It marked an era in the investigation of the subject.

Among the other essays in this division are three morphological papers, read before the British Association in 1856. They contain a summary of Good sir’s views on the Morphology of the Nervous System in Annulosa and Vertebrata; and on the much-debated subjects of the Morphology of the Vertebrate Cranium and the Morphology of Limbs. In these contributions, which are remarkable for originality and comprehensiveness, Good sir introduced a reference to embryological development as a criterion for the determination of morphological questions, and communicated the results both in the correction of errors and the discovery of new truths which he had obtained by this method.

In this section we find also the description of the structure and relations of the thymus, thyroid, and supra-renal bodies, viewed as remains of the blastoderm; and the interesting paper on the mode of enclosure of musket-bullets in the elephant’s teeth. The latter subject belongs rather to pathology. Good sir’s mode of treating it shows not only his acuteness as an investigator, but the strong tendency of his mind to seize upon great leading principles. Commenting on the resemblance of the abnormal ivory in the elephant’s tusk to the peculiar substance which fills the pulp-cavities of the tusks of the walrus and the teeth of cetacea, he deduces from it a proof of the fundamental relations of physiology and pathology.

“This identity of a diseased structure in one animal with a normal structure in another is remarkable, and must be looked upon as another instance indi-
cating the existence of a system of laws regulating the relations between healthy and morbid tissues—laws which have been speculated upon but have never been sufficiently investigated by anatomists."—Vol. ii. p. 62.

The mathematical determination of organic forms is a kind of research which is still in its infancy. Goodsir's lectures on the subject begin the second division of vol. ii., which contains his memoirs on Anatomy, Physiology, and Pathology. It was a subject which powerfully attracted his mind. He had early devoted attention to it; and towards the end of his life he appears to have pursued it with an enthusiasm almost morbid. In a lecture delivered in 1849, he introduces it thus:—

"Anatomy has hitherto been advanced by the study of the animal form, and of the exact harmony under which only the animal could exist. But there was another view that might be taken. Was it not possible, by ascertaining the accurate shape, the form, and the proportion between the parts, organs, and whole body of an animal, to advance the study geometrically? Suppose the anatomist gave the exact curvature of the surface, the volume and proportions which different parts of the organs might bear, what their formal geometry was might become matter of calculation." He then refers to Professor Moseley's geometrical examination of spiral shells, in which he found the curve to be logarithmic, and "from it had framed a series of formulas by which the other conditions of the shell could be predicted and found to exist. . . . Professor Moseley's paper," he continues, "contains the germ of what would yet form a new epoch in natural science. . . . It would be curious that if the law of the square were the law of attraction, the law of the cube might prove to be the law of production. . . . Probably the logarithmic spiral would be found to be the law at work in the increase of organic bodies."—P. 208-213.

In pursuance of the same subject, Goodsir subjected the ingenious views of Mr D. R. Hay, on the Geometrical Outline of the Human Figure, to the test of accurate measurement, and had reason to be astonished with the correspondence of the results with the theory. It appears from his biography, that in the later years of his life Goodsir made a large number of measurements of individual parts of the human body, with the purpose of reducing their forms to triangles. It is certain that the geometry of organic forms was, in Goodsir's mind, a fundamental doctrine of anatomy; he regarded it as a great principle which would conduct towards the more perfect anatomical science of the future.

Less speculative, but to the same purpose, are the researches on the mechanism of the joints, according to the views of the Webers and Meyer. The knee-joint and hip-joint have been traced to the principle of the screw—a principle which, following Goodsir, Dr John Smith of Edinburgh has ingeniously applied to the articulation of the lower jaw. Goodsir also describes on the articulating surfaces different facets which are brought into apposition only in particular positions of the joint, and he assigns a special use to the synovial pads in the adjustment of joints. No better illustrations could be desired of geometrical configuration. Not to extend beyond our limits, we can only refer to his notice.
of the curious structures detected in the Retina, and the Lamina Spiralis Cochleæ by Müller, Corti, and others, as well as his observations on the electrical apparatus of Torpedo, Gymnotus, Malapterurus, and Raia, and his review of the state of organic electricity in 1855. We may only remark, that as the previous papers deal with the mathematical relations of organic forms, so the latter deal with the physical relations of organic forces, thus comprehending the most advanced views of modern anatomy and physiology.

Of the remaining papers in this section, that on the Sarcina Ventriculi is too well known to need any comment; and the others on the diseased condition of Peyer's glands in enteric fever, and on the structure and pathology of the kidney and liver, we shall allude to presently.

The last part of vol. ii. is reserved for the collection of researches published as "Anatomical and Pathological Observations" in 1845, forming a small volume remarkable for the brevity and the originality of its contents. Along with a few papers by his brother Harry, which are here reprinted, this part contains Goodsir's chief discoveries in physiology and pathology. Of the physiological essays, that on the secreting structures is the most celebrated, as having afforded complete anatomical proof of the secreting function of the cell in glands. The treatises on the placenta, the lymphatic glands, and that on the structure and economy of bone, are scarcely less important. They are all too well known to offer any occasion for remark. The pathological papers, on the other hand, from the intimate relation they bear to recent progress in that science, deserve a more particular notice. Specially interesting in this point of view are the essays on absorption and ulceration, showing the agency of the cell as the structure engaged in these processes; the description of the process of ulceration in articular cartilages; and the account of the reproduction of bone in necrosis. In the paper on cartilage, was distinctly shown for the first time the important fact of the growth of cells as the essential agency in the process of absorption or ulceration in a non-vascular part. It is remarkable, that while detecting the cell agency in absorption, Goodsir has not explicitly traced the formation of the false membrane which covers the cartilage to the growth and liberation of the cartilage-cells, as was done subsequently by Redfern. Nevertheless, there was here one of the first steps towards what is now called a "cellular pathology." And in this connexion, his paper on Peyer's glands in fever, already alluded to, and which was first published in this Journal in 1842, is remarkable. He there traces the enlargement of Peyer's glands to the growth or germination of cells in the vesicles of which the patches are composed. It is to be noted, that he purposely avoids the term "inflammation" in his description, observing that, "Whether the changes I have described originate in inflammatory action or not, of this I am certain, that the ulceration and pseudo-sloughing is the immediate effect of the distention from the submucous vegetating mass, and would occur..."
whether the latter were produced by inflammation or not" (p. 377). Here "vegetation"—i.e., growth, germination, or, as it is now called, proliferation of cells—is recognised as the essence of a morbid process, although the relations of that process to inflammation are left undetermined. These observations are so important that it is surprising that Goodsir did not republish them in the Anatomical and Pathological Observations; they have, in consequence, been less known than they ought. A similar remark applies to Goodsir's observations on the kidney of Bright's disease, communicated to the Medico-Chirurgical Society of Edinburgh, also published in brief abstract in this Journal in 1842. In this paper (in which the fibrous matrix of the kidney was first described) the following important passage occurs (p. 380—the italics are ours):—

"I do not pretend to decide whether the morbid changes in the kidneys in the various stages of the granular disease of Bright originate in inflammation or simply in congestion of the gland, but may remind the Society of those changes which, at a former meeting, I announced as occurring in the vesicular glands of the intestine during fever—namely, the formation and progressive increase of nucleated cells (probably aberrant forms of the epithelium which lines the vesicles) within the vesicles of the patches, and may now state that granular degeneration of the kidney has a similar increase; that it consists essentially of the formation of nucleated cells within the uriniferous ducts; that these new cells were principally confined to the ultimate loops of the ducts, but that in advanced stages of the disease they may be formed even in the tubes of the pyramids of Ferrein; that when a single ultimate loop of the uriniferous ducts was gorged or distended with the increasing mass of germinating cells, or when two or more neighbouring loops were in this condition, the little mass constituted one of the granulations characteristic of the milder forms of the disease; that when, throughout the gland, or in certain portions of it, the germinating masses had so far distended the ducts and loops as to cause their disappearance, and to induce absorption of the walls of the little chambers of the fibro-cellular capsule, and consequently of the uriniferous ducts, the whole of the cortical portion of the gland, or that part of it more particularly affected, assumed the appearance presented in the more advanced stages of the disease. If the patient survive the stage last described, the kidney becomes partially or wholly atrophied—a change due to the contraction of fibrous tissue, produced either from the cells which constitute the disease, or from cells resulting from effused fibrin. With the exception of the primary engorgement of the capillary system, and of the Malpighian corpuscles and their subsequent diminution, I have not observed any very marked change in the vascular system of the kidney during granular degeneration of the organ."

This passage is so interesting, and so little known or referred to, that we have quoted it entire. The observations contained in it, dating as far back as 1842, prove clearly the originality of Goodsir's views in these departments of cellular pathology. Certain morbid processes in Peyer's glands, in the kidney, and in cartilage, were distinctly traced to cell-germination. These were the first steps in an entirely new line of research, which Goodsir unfortunately did not pursue further. They remained as remarkable but isolated instances of pathological processes. They did not affect the general doctrines which were then and for long after pre-
valent, that the effusion of fibrin or lymph was the source of inflammatory and most other products of diseased action. It was reserved for Virchow, by his researches on the structure of connective tissue, and its relations to cartilage and bone, and by tracing the genesis of inflammatory products and of tumours, to deduce, from a wide range of facts, a general principle or law, and thus lay the foundation of his system of cellular pathology, of which Goodsir's researches, though a very important, were only a partial anticipation.

We have deferred to the last the notice of Goodsir's paper on Centres of Nutrition, because it may be regarded as containing the summary of his views on the first principles of organization. This doctrine proceeds from the cell theory of Schwann, but goes beyond it, by referring nutrition to a process of cell-germination, and assigning to the nucleus a function of development in accordance with the views of Martin Barry. As usual, this doctrine is very succinctly stated, but it is mainly as follows: Centres of nutrition are essentially centres of germination. The germinal spot of the ovum is the original type of a nutritive or germinal centre, and is the source from which, by a process of cell-development, all the other centres are derived. These derived centres correspond in number and distribution to the different parts of the organism, so that each part arises by cell-development from its own centre or centres, just as, in the ovum, the primordial cells are derived by development from the germinal spot. From this it follows that the whole organism is divided into departments, consisting of a central or capital cell (centre of nutrition), around which a certain number of simple cells are grouped. The central cell is the mother of all the simple cells within its own territory. It has, like the germinal spot in the ovum, absorbed materials of nourishment for them while in a state of development, and then passed them off after they have been fully formed, or are capable of independent growth. "A nutritive centre is, therefore, merely a cell, the nucleus of which is the permanent source of successive broods of young cells, which from time to time fill the cavity of their parent, and, carrying with them the cell-wall of the parent, pass off in certain directions and in various forms, according to the texture or organ of which their parent forms a part." Centres of nutrition are, however, of two kinds—those of the organs and those of the textures. Those of the organs are in most instances temporary, existing only during the embryonic stage. They afterwards either disappear or break up into the various centres of the textures of which the organs are composed. But the nutritive centres of the textures in general remain permanent, in the form of nuclei. Goodsir directs special attention to the basement, or, as he calls it, germinal membrane. This he regards as a membrane formed by flattened cells which cohere at their edges, their nuclei constituting germinal centres, from which the secondary cells—e.g., the secreting cells of glands—are derived. To this we may add,
that secretion was also ascribed by Goodsir to a similar process of germination of the nucleus. He says (p. 426):

"I have satisfied myself that I was in error in attributing [in his first paper on the secreting structure, in the Transactions of the Royal Society of Edinburgh in 1842] to the cell-wall the important function of separating and preparing the secretion contained in the cell-cavity. The nucleus is the part which effects this. The secretion in the cavity of the cell appears to be the product of the solution of successive developments of the nucleus, which in some instances contains in its component vesicles the peculiar secretion, as in the bile-cells of certain mollusca, and in others becomes developed into the secretion itself, as in seminal cells. In every instance the nucleus is directed towards the source of nutritive matter; the cell-wall is opposed to the cavity into which the secretion is cast. This accords with that most important observation of Dr Martin Barry, on the function of the nucleus in cellular development."

In short, nutritive centres are cells, the nucleus of which is continually developing new broods of young cells, which are arranged in successive layers around the parent centre. The youngest layer is placed next the centre, the oldest most remote from it. By this germinating process, not only are the organism and its parts first formed, but the nutritive renewal of parts is accomplished, and secretion is performed by a repetition of the same process; so that growth, nutrition, and secretion are different modes of one fundamental process—viz., the germination of certain central nuclei.

Such is an outline of Goodsir's great theory of nutritive or germinal centres. The example, in which he best explains it in detail, is bone. He there describes the contents of the lacunæ, consisting of masses of soft cells, as "the nutritive centres, germinal centres, or germinal spots of the texture," by which the compact osseous substance (which he at that time believed to consist of calcified cells) was nourished, while it served likewise for the production of new calcigerous cells as the old cells dissolve, and their débris falls back into the returning circulation (p. 463). Although our present notions of the structure of the compact substance are different from this, the illustration explains his views. In the other papers, constant references occur to germinal centres, as in those on secreting structures, on the absorption by the intestinal villi, on the structure of the thymus, thyroid, etc., and in some of Harry Goodsir's contributions.

Although some of the observations on which it was founded are now regarded as erroneous, and although nutrition and secretion are not at present referred to the germination of nuclei, yet the leading idea of this theory is unquestionably of great importance; and it does not appear in our own country to have received the attention or to have been followed out as it deserved. What was needed to give it currency, was to illustrate and confirm the principle by detailed examples. But anatomists have not yet pointed out the special germinal centres of the liver or kidney or other glands in the embryo; and in the adult body, although well acquainted
with individual or independent cells and nuclei, we know of few examples of cell-territories as Goodsir defined them—i.e., parent cells surrounded by their progeny. The cell-territories of Virchow, which some have confounded with Goodsir's, are entirely different. They consist not of a parent cell environed by simple cells, but of a simple cell surrounded by blastema or intercellular substance. But while the recognition of distinct groups of cells surrounding a centre requires renewed investigation, the germinating function of the nucleus has in recent times assumed a primary importance. In consequence chiefly of the researches of the Germans on the structure of connective tissue, the existence of what are really germinal centres pervading the whole body has been recognised in the connective-tissue corpuscles. In physiology, these corpuscles play a most important part; and they are one of the chief foundations of the cellular pathology of Virchow. Further, the original and ingenious views so skilfully elaborated by Beale, on the germinal matter and formed material, are also an independent evolution in a new direction of the fundamental idea of germinal centres. It is quite plain, therefore, that under various modifications the action of germinating centres constitutes, at the present time, a fundamental principle both of healthy and morbid organization; and the merit of first pointing out this principle belongs, we believe, incontestably to Goodsir.

The interesting question now arises, Did Goodsir apply his theory of germinal centres universally? Did he regard them as the source not only of all physiological, but of all pathological products? We do not remember any statement of his in regard to the independent origin of germinal centres, although the formation of nuclei by precipitation in a blastema, as described by Schleiden and Schwann, was the prevalent doctrine at the time Goodsir wrote. The presumption is, that in the physiological series Goodsir believed all cells to arise from germinal centres—a doctrine which is equivalent to Virchow's axiom, "Omnis cellula e cellula," in its physiological aspect. In regard to pathology, we have already fully referred to the examples in Peyer's glands and the kidney, in which the origin of morbid products was with probability assigned to the germination (proliferation) of pre-existing normal cells. So far his observations anticipate the cellular pathology of Virchow. But when we come to consider the products of inflammation, lymph or pus, and the new formations, tubercle and tumours, we find that Goodsir had not passed beyond the usual theory of their independent origin in an exudation of fibrin. Nowhere does he explicitly trace lymph, or pus, or cancer-cells, back to normal cells or germinal centres; and besides incidental allusions to cells resulting from effused fibrin, we find the following distinct statements in his latest pathological contribution, published in this Journal in February 1850 (p. 99), and which, doubtless by some accident, is omitted in the present collection of his works. This paper treats of the site of morbid action in diseases of bone. We do
not refer at present to his views there stated, that true caries consists essentially in the obliteration of the corpuscles of bone, but to the remarks on the parasitic nature of inflammatory effusions. The whole paper is a very valuable and interesting one, but the following quotations, especially the last paragraph, will be sufficient. Bone, like other textures, he explains, consists of essential and necessary elements.

"The essential elements of the osseous texture consist of all that part which resists maceration, along with the contents of the corpuscles" [lacune]. . . . "The accessory elements are the periosteum, with the vessels and nerves which ramify in it; the cells, areolar texture, fat, vessels, and nerves which occupy the continuous network of Haversian canals and cancelli which are hollowed out in the hard substance." . . . "Our knowledge of the diseases which have their site in the essential elements of the textures is still in its infancy; but I am inclined to believe that they consist principally of alterations in the nutritive and reproductive functions, in the chemical or physical constitution of the textures. The fatty degeneration of muscular texture is a familiar example of a morbid change of this kind." . . . "The great majority of the recognised morbid changes have their site in the accessory elements of the textures. They are situated in the midst of the areolar texture, and among the vascular and nervous networks which separate as well as connect all the essential textural elements of the frame. They consist generally of bloody or other infiltrations; of lymph in various stages of development; of pus; of the various forms of new formation, such as cancer, tubercle, etc. It will thus be perceived that the majority of diseases are situated, not in the essential textures of a part, but around or amongst them; that the majority of these are new formations, parasitic in their nature, making their appearance, undergoing development, and occupying a position in the areoles of that general connecting texture which, either in the form of the nucleated cellule or of the filamentous fibre, is the first to appear as well as the most lasting and abundant of all the textures."

It will be clearly perceived that the views here expressed in regard to inflammatory products and new formations are those of the infiltration or exudation theory, not those peculiar to the cellular pathology of Virchow.

We have enlarged somewhat on these theoretical and pathological doctrines, mainly on account of their great importance in the present state of science, for great theories constitute the very life of science; but we have also been induced to do so, in consequence of the accusation which has been made in certain quarters against Virchow of plagiarism from Goodsir. That charge has been already refuted in our pages (February No., p. 766). Instead, therefore, of repeating a controversial discussion, we have thought it best, in justice both to Goodsir and to Virchow, to show in detail, so far as our space would permit, what Goodsir had really accomplished. In doing so, we have confined ourselves to Goodsir alone, not mentioning the share which Kiss, Reichert, Donders, and others had in contributing to the results at which Virchow was laboriously arriving. It will be seen that Goodsir had at an early period, some years before Virchow, made certain remarkable discoveries, and laid down certain general principles in the direction of the cellular pathology—he had advanced a certain way in the inquiry. For this he is entitled to great honour, and has received acknowledgment.
from Virchow himself in his papers, and in the flattering dedication of the English translation of his "Cellular Pathology" to Goodsir. But the application to pathology of the axiom, "Omnis cellula et cellula,"—i.e., the genesis of every morbid product from pre-existing physiological elements—the discrimination of "parenchymatous" inflammation—the demonstration of the important relations of the connective-tissue corpuscles—the discovery that cell-proliferation, and not exudation, is the essential part of the inflammatory process—the recognition of inflammation in non-vascular textures,—these form a sum of doctrines and discoveries, the merit of which belongs to Virchow, and these constitute his Cellular Pathology.

Not professing to notice all of interest in these volumes, we have referred, as far our space would permit, to the chief discoveries and doctrines of their illustrious author. From even a cursory review, Goodsir's special merits as a scientific discoverer are sufficiently apparent. Two great qualities are strikingly displayed,—1st, His originality as an investigator. Not following the beaten path, he selected subjects which had a crucial importance for the progress of science. 2d, His powers of generalization. He showed an innate tendency to seek for first principles in all he saw. This is apparent in every paper he wrote,—the general always emerges from the particular. The tendency to the intuition of principles is a character of great minds. It is a method which they alone can pursue. Weaker intellects are led astray by it to baseless speculation and delusive hypothesis. But in Goodsir it was rendered valuable not only by the native strength of his intellect, but also by the safeguard of his immense accumulation of particular knowledge. Nothing insignificant could arise out of such vast and real experience. Hence he not only enriched anatomical science by individual discoveries, but he communicated to it the inspiration of fertile principles. He worked towards a great ideal,—the highest ideal to which Anatomy and Physiology probably can be raised. He aspired to make Anatomy the science of organic forms, and Physiology the science of organic forces.

We must not conclude without expressing our obligations to the editors. It could not be other than a laborious task to examine the papers of the late Professor, and decide what was fit to see the light and what must be sacrificed. It must be a source of satisfaction, however, to Professor Turner, that he has collected together what represents the state and progress of Anatomy in the University of Edinburgh during the last five-and-twenty years. The result is to show that that science occupied a position of which any University or country might justly feel proud.

Of the Biography of Goodsir, by his friend Dr Lonsdale, which forms the introduction to the first volume, we have not space to speak at length. We commend its perusal to all who are interested in the lives of men of genius. With scanty materials at his disposal, Dr Lonsdale has written a most picturesque biography; bringing
vividly before the reader the boy of talent and independent judgment,—the earnest student,—the enthusiast for science amid the drudgery of country practice,—the scientific worker in his confined lodgings encumbered with the material of his studies,—the struggles of ambition,—the relaxations in the brilliant circle of the Oimomathic Brotherhood,—then the Professor more earnest and indefatigable than ever,—lastly, the failing health and untimely end. The critic may object that the enthusiasm of the biographer has occasionally led him into prolixity and overstrained writing. To avoid tameness, Dr Lonsdale has added more ornament than was necessary; but he is gifted with powers of delineating character and narrating events such as few possess; and he has given us a lasting memorial of Goodsir, full, truthful, warm-hearted, such as we seldom have of scientific men of genius.

_**Part Third.**_

**MEETINGS OF SOCIETIES.**

**PROCEEDINGS OF THE EDINBURGH OBSTETRICAL SOCIETY.**

**SESSION XXVIII.—MEETING VIII.**

10th March 1869.—Dr Burn, President, in the Chair.

James Ormiston Affleck, M.B., C.M., L.R.C.S., was admitted as an Ordinary Fellow; and John Wilson Paton, M.B., M.R.C.S.E., as a Corresponding Fellow.

I. **CASE OF CEPHALOTRIFSY AFTER TURNING, WITH REMARKS. BY DR KEILLER.**

Dr Bryce said, that in a previous discussion on this subject, it was stated that Sir James Simpson’s cephalotribe was useless for breaking up the base of the skull; but in this case it had been perfectly successful. He thought it was of great importance to get the instrument applied well over the head, because he could easily conceive that the blades might bend if the whole strain were put on the points.

Dr Macdonald thought that any one who had looked at this cast would see that there must have been some mistake as to the experiments performed by Dr Duncan, who said that the blades of the instrument would bend; for in Dr Keiller’s case, the strongest part of the fetal head was crushed.

Dr Burn said that he had seen two cases in which the head was left in the uterus, and in both there was very great difficulty in extracting it.

Dr Inglis stated that all Dr Duncan’s experiments were conducted upon the idea that the head was presenting; and even with a small weak head he had seen the tips of the instrument yield. He had had one case in which Simpson’s cephalotribe failed and Duncan’s was successful. Besides, in this case of Dr Keiller’s, the malar bones were not completely crushed. He thought that Dr Duncan’s views had not been fairly understood. Dr Duncan had stated that no short cephalotribe he had been able to obtain could crush up the base of the skull with the tips of its blades; but from the remarks he (Dr Inglis) had heard, it was evident that Dr Duncan was supposed to have said that the short instrument could not squeeze the head out of shape. With regard to Dr Keiller’s case, Dr Inglis