was formed after death by the surgeons who made the *post mortem* examination. From the great demands upon our space, we regret that at present we cannot print the letter to which we refer.

After some very appropriate remarks by the Lord Chief Baron (Sir F. Pollock), the Grand Jury returned—"NO TRUE BILL AGAINST MR. HICKS FOR MANSLAUGHTER".

UNIVERSITY REPRESENTATION IN PARLIAMENT.

THE Parliamentary Representation of Universities is a question entirely distinct from that of the parliamentary representation of the medical profession; and we are inclined to think that the commingling of the two in public discussions is likely very materially to injure both causes. The representation of universities ought to be advocated with a view to secure the equal representation of everything that is in them—of literature and science in general, and not of medicine in particular; and, on the other hand, the representation of the medical profession ought, if it be agitated for at all, to be candidly espoused upon its own special merits. The chance of medicine, or even of London medicine being represented in Parliament by the University of London, is visionary in the extreme; and if indeed such an idea had any plausibility, we might ere now have heard it urged as a valid objection to the enfranchisement of that institution. The just claim to representation set forth by the University of London is very much weakened, in place of being in any degree strengthened, by an exaggeration of the probable influence in elections of its medical element: and to aim at medical representation, by swallowing up university representation, is only to obstruct the march of the cause of the universities, without in the least advancing our own.

We regret very much that an agitation for the parliamentary representation of the Scottish universities does not proceed *pari passu* with that which is at present so vigorously carried on by the graduates of the University of London on behalf of their Alma Mater. The universities of Scotland educate upwards of three thousand five hundred men for the higher walks of literature and science, and for the literary and scientific professions; and it is very clear, that if the Metropolitan University has a right to be represented in Parliament, the Scottish universities have a stronger claim. As the claims of both, however, though of a similar character, are in no degree antagonistic, we advise cooperation, feeling convinced that in any parliamentary reform which involves an appreciable change in the constitution of the House of Commons, the united efforts of the unrepresented graduates could not fail to obtain two members for London and more than two for Scotland, while we are equally sure that nothing will be given to the one which is withheld from the other.

The objection, that Scottish graduates have nothing to say in the government of their universities, appears to us to be wholly irrelevant. It was all very well, and very natural, for Mr. Disraeli to make a handle of such a crotchet, because a minister of the crown requires to be constantly looking out for objections wherewith to stem the pressure of parties clamouring for favours; but it is a very odd thing for an unfettered friend of university representation to attach the slightest value to the objection.

The following appears to be the true state of the question.

Is it desirable that great Universities should have their interests represented in Parliament, in common with those of other important bodies in the state? Is it desirable that the science, the literature, and the education of a civilized country should be represented? If both of these questions be answered in the affirmative—and an affirmative answer will undoubtedly be given by the great mass of the educated classes in the British dominions—then, in what better way can these objects be secured, than by means of representatives, chosen by individuals who have been so long and so thoroughly educated at the Universities, as to have carried off literary or scientific honours? And what does it signify to the interests of the country, or of the Universities, or of literature and science, whether such a constituency—provided it be large enough—have or have not a word or two to say in University Government? It might, as Dr. SNOW BECK suggests, be a very proper thing to incorporate the graduates of the Scottish Universities, and the graduates of the University of London, with their respective universities, bestowing upon them at the same time certain rights and privileges; but we cannot see the slightest reason why the want of this incorporation should either prevent or delay the enfranchising of the graduates of the unrepresented universities.

ORIGINAL COMMUNICATIONS.

ILLUSTRATIONS OF DISEASES OF THE HEART AND AORTA.

By R. HUTCHINSON POWELL, M.D.

THE following cases, hitherto mostly unpublished, of cardiac and aneurismal diseases, will serve as types of those affections, and afford an opportunity of glancing at recent views regarding their physiological and pathological relations and their treatment. The narratives are, for the most part, condensed from the minutes of statements made by the relators, with a view to discussion; and, therefore, are not so full as they might have been if designed for publication. With the responsibility attached to the commentaries I am alone chargeable.

I. ILLUSTRATIONS OF CARDIAC DISEASE.

CASE I. HYPERTROPHY OF THE LEFT VENTRICLE WITH DISEASED AORTIC VALVES. (Related by Dr. Theophilus Thompson.) The subject, a man aged 50 years, had been a pedestrian, and his disease was attributable to violent exertion. He had a well marked cardiac murmur. After death, the left ventricle was found to be very much enlarged, as were also the aortic valves, which were opaque and rigid, their borders being relaxed and admitting of retroversion. The aorta at its origin was enlarged and ossified. An aneurismal tumour, of the size of a lemon, was found in the coeliac axis.

This case is a very simple instance of the injurious effect upon the cardiac apparatus, consequent on over-exertion and mental excitement. All the conditions for the production of *bruit* were present; the stream of blood was thrown into eddies by the rigid valves interfering with its free exit from the ventricles; irregular and comparatively slow vibrations were then set up in the vascular wall, thus producing the sonorous phenomenon termed *bruit*. This morbid sound becomes a thrill when perceived through the sense of touch, and requires the great vessels or heart to be in contact with the thoracic parietes for its detection. Death results in such cases as the above, from the heart being overtasked. The valves normally support the column of blood after ventricular contraction, and so give the heart rest; but in these cases, the ventricles being compelled to

sustain the pressure of regurgitant blood, distension and enlargement ensue. The arteries become tortuous from loss of elasticity, and the relation shown by Volkmann to exist in health between the lateral and longitudinal distensibility no longer obtains. The cardiac bruit is propagated along the larger arteries, and becomes so modified and even intensified, as to suggest a local or independent origin. Professor Kiwisch, however, gives very convincing data under this head, which go to prove that, in order to effect the requisite tension for producing sound in an arterial tube, the fluid pressure must be very great, such as never exists in patency of the aorta. The principles of treatment involve the maintenance of the compensatory enlargement and power of the heart. Digitalis and other sedatives are either non-admissible, or but sparingly to be resorted to, as more blood recoils into the ventricles during their slow contraction, than during their rapid action. An issue should be inserted; and if plethora arise, small venesections are to be employed. The indications being to keep the blood diminished in quantity but rich in quality, the muscular system being thus duly supported, no slops or malt liquor should be taken. Exacerbations of slow inflammatory action leading to atheromatous deposit in the aorta, and marked by paroxysms of anginous symptoms (dyspnoea, cardiac pain, palpitation, and sense of impending death), should be met by local bleeding, counterirritation, and a mild mercurial course.

CASE II. DILATATION OF THE HEART, IN CONNEXION WITH NARROWING OF THE AORTA. (Dr. T. Thompson.) The case was that of a young woman, of slender conformation, suffering from palpitation of long date, which latterly had been sufficient to raise the bed-clothes, but with almost imperceptible pulse at the wrist. The apex of the heart beat between the sixth and seventh ribs, about an inch to the left of the line of the nipple, its position rarely changing with change of posture. She had occasionally suffered from rheumatism. Loud and extensive systolic bellows-murmur was audible in the situation of the apex, and in the dorsal region. The case was treated with aperients, calomel, opium and digitalis. The apex of the heart returned to its normal site, and the pulse fell to 80, and became nearly regular, contemporaneously with the production of slight ptyalism; the bruit, however, still persisted. Narcotics were prescribed, but the case terminated fatally six weeks after coming under notice.

A *post mortem* examination showed the left auricle to be distended to the bulk of a cricket-ball; the mitral valve, though slightly thickened, was not contracted, and was partly competent to its function. The left ventricle exceeded its average proportion, from valves to apex, by one inch; its walls were but slightly thickened. The normal measurements (Bisot's) being three inches in length, and six lines in thickness, the right ventricle deviated but little from the usual size: it was three inches two lines, instead of three inches, in length, and two and a-half lines in thickness. The calibre of the arch of the aorta was less by one inch and some lines than the average (two inches seven lines); the aortic valves and the lungs were healthy. Slight regurgitant mitral disease, from relative insufficiency of the mitral valve, probably existed in this case. The situation of the apex was accounted for by the turgescence of the ventricle arising from endocarditis. The left auricle being thus intermediate between two blood-currents of abnormal amount, became dilated; the left ventricle escaping in great part from the effects of the aortic contraction—the most prominent feature in the case—by transferring the *onus* of the circulation to the auricle, with its relatively inadequate valvular protection.

This case well contrasts with the preceding; the indications of treatment being nearly reversed in obstructive ventriculo-arterial disease. The objects in view in such cases are to arrest and remove the effects of inflammation of the internal cardiac coat, and by sedatives, as digitalis, to cause the heart to act slowly; so prolonging the intervals of contraction, as to allow of the arrival and trans-

mission of a sufficient amount of blood. The rate of the circulation should be approximated to that of reptiles, who possess but small valvular apertures, and have but from twenty-five to thirty beats of the heart per minute. In this case, the left auricle compensated for the insufficiency of its valves; and the special effects of obstruction were in part shared with the corresponding ventricle. The physical signs, symptoms, and related structural changes at the aortic opening, characterizing such disease in the walls of each compartment, were unequally distributed, and consequently not clearly referrible exclusively to either chamber of the left side of the heart. The consecutive symptoms occurring in mitral disease were here anticipated by early dissolution, probably hastened by the feeble constitutional resistance of the patient.

CASE III. HYPERTROPHY OF THE HEART, ASSOCIATED WITH GRANULAR DISEASE OF THE KIDNEYS: DEATH FROM APOPLEXY. The subject was a female, aged 25, a laundress. She had had bronchitis with hæmoptysis, for two months previous to coming under notice. Her symptoms were then chiefly pectoral; and five days after admission, she was sleepless from cough. On the sixth day, one eye became amaurotic, and on the eleventh day she had an attack of apoplexy; on the fourteenth day she sank without convulsion or febrile disturbance. Before death, the woman passed her urine frequently, and in small quantity; œdema of the extremities was also present. The treatment embraced cupping, mercurials, tartar emetic, digitalis, camphor, henbane, etc.

A *post mortem* examination showed the convolutions of the brain to be flattened, the cerebral substance being normal in all respects, except in its weight, which was three pounds and a half avoirdupois. The cerebral ventricles were small and as if compressed. The air-tubes were injected, the right lung being congested; there was no tubercular or pleuritic deposit. The heart weighed twenty-one ounces; the left ventricle being the chief seat of hypertrophy. The mitral valve was free from disease; the pericardium exhibited slight traces of incipient inflammation. The liver weighed three pounds and a half, the spleen seven ounces and a half, and the stomach six ounces and three-quarters. The right kidney weighed five ounces, and was less diseased than the left, which was atrophied, and much disorganized, weighing only two ounces and a quarter.

In this case, the renal disease probably existed prior to the cardiac enlargement, which, together with hypertrophy of the brain and of other organs, was a consequence of imperfect depuration of the blood, and interrupted circulation in the blood-vessels and capillaries. Secondary inflammatory disease in the serous membranes is, moreover, peculiarly liable to occur in such cases. The woman's occupation rendered her very liable to defective or checked cutaneous exhalation, and consequent congestive disease of internal organs. The kidneys were manifestly exposed to strain and irritation, from the posture which such occupation requires. The remote cause, however, was most likely a constitutional vice of distant origin, and of slow progress.

CASE IV. ANGINA PECTORIS, WITH OBLITERATION OF THE CORONARY ARTERY, ETC. (Mr. A. Anderson.) A female, aged 32, in good condition and otherwise healthy, had been for seven years subject to violent fits of palpitation, neither preceded by nor attended with rheumatism. Latterly she had suffered repeated attacks of angina pectoris, and eventually died in a paroxysm.

On *post mortem* inspection, a reddened spot an inch and a half square was observed over the pericardial coat of the sinus of the aorta; fibrinous flakes extended across to the opposite wall of the pericardial sac. The aorta was somewhat dilated, and its internal coat for many inches was covered with atheromatous deposit, which also quite filled up the right coronary artery, the left being obliterated in like manner at the origin. The aortic valves were enlarged, and thickened at their free edge, but were apparently competent to their function. The left ventricle was much enlarged, and red. The right ventricle and auricle were greatly

diminished in size, and attenuated. The coats of the coronary vessels were normal, but the right coronary artery was contracted, and contained a coagulum. Obstruction had existed probably for a lengthened period, and induced the atrophied state of the right cardiac chambers, in conjunction with the adaptation ensuing on enlargement of the left cavities.

This case indicates the close causative connexion existing between aortitis and its sequents, atheromatous or fibrinous deposits, the progressive stages of disease being shadowed forth. The primary aberration probably arose from deranged nutrition, which further resulted in slow inflammatory action in the subserous tissue of the vessel, leading to effusion. Angina pectoris is also frequently associated with diseased cardiac valves or orifices, ossification of the coronary arteries, structural alteration in the muscular walls, or other change in the heart; this disease, however, is not necessarily connected with organic change, but is rather the result of disorder of the nerves concerned in cardiac innervation, from mechanical compression or other agency interfering with this function.

CASE V. SLIGHT HYPERTROPHY OF THE HEART, ASSOCIATED WITH FIBROUS TRANSFORMATION OF ITS TISSUE, AND WITH GRANULAR DEPOSIT IN THE LIVER AND SPLEEN, ARISING FROM MALARIA AND CHANGE TO A COLD CLIMATE. (Dr. James Bird.) The subject, a military gentleman, aged 50, long resident in a malarious district of India, returned to England six months before coming under notice. He had been occasionally troubled with diarrhoea, ague, and loss of flesh. He was of spare conformation and nervous temperament, taking much exercise, and enjoying tolerable health while abroad, with the above-mentioned exceptions. He had latterly resided in Lincolnshire; and, on his return to town shortly after, was attacked with muscular pain in various parts of the body, which was neuralgic in character in the inferior extremities. The pulse was 110, irritable, and jerking; the urine was scanty and high coloured; the tongue white; the skin cool; the bowels were moved by laxatives. The symptoms at first increased in severity, and were accompanied with a harsh systolic endocardial murmur, with feeble cardiac impulse. The præcordial dulness was natural. There were slight crepitation and cough, and tenderness along the cervical and dorsal vertebrae, with pain extending to the arms. The urine was acid, of sp. grav. 1034, with lithic deposit on cooling. The patient suffered from attacks of ague, and his pulse in a few days became feeble and intermittent, with anxiety, oedematous præcordia, and coarse respiration. The muscular pains increased in severity, the urine becoming nearly solid from crystals of nitrate of urea, on the addition of nitric acid after boiling. The patient subsequently got relief from some of his symptoms, the endocardial murmur still persisting; but he was troubled with oppression of the chest almost amounting to angina pectoris, with intercostal pain extending to the lumbar region. Three weeks after first coming under notice, he suddenly died in a syncopeal fit.

On *post mortem* examination, the pericardium was found vascular, with partial fibrinous exudation. The heart was small, its apex extending to the lower edge of the sixth left rib. The left ventricle was much dilated, its section exhibiting interspersed fawn-coloured deposit, extending to the chordæ tendineæ. Under the microscope, fatty degeneration was shown. The mitral valve was affected with slight marginal thickening. The lungs were emphysematous and congested; the left adhered to the costal pleura from old adhesions; some serum was contained in the left pleural cavity. The liver was finely granulated, and nutmeg-coloured; its left lobe was softened. The spleen was of twice its normal size, and broken up, with buff-coloured patches interspersed. The kidneys were congested, but not otherwise altered. In this case, a blood-lesion probably existed, which became localised from hyperæmia, the effect of cold, and thus led to fibrinous deposition (determined under the microscope), terminating in death.

REMARKS. The preceding cases, as well as those which will

follow, serve to illustrate the paramount importance of taking into account the relation which the contained fluid bears to the circulatory and other apparatus of the organism, in striving to estimate the part played by each in the evolution of disease. That the *fons et origo mali* was the presence of abnormal elements in the blood, together with disturbed nutritive equilibrium, cannot be reasonably questioned. Whence, then, arose this deterioration, or aberration from the normal standard? I shall here quote some remarks made by myself some years ago (*Provincial Medical and Surgical Journal*, vol. for 1846, p. 464), which, I think, are apposite to the solution of this point:—"It may be questioned if our increased attention to physical diagnosis at the present day be not, in some measure, pursued with a too exclusive bias, to the neglect or inadequate appreciation of those subtle elements of disease, collected from a more comprehensive view of the animal economy. Reaction ever leads to erroneous conclusions, if carried beyond its legitimate boundary. . . . If any *physical* constituent of the organism deserve to be considered *alive*, the blood may well be deemed so; whether viewed in relation with the logical or chronological order of its appearance; pervading all structures, making disease palpable, and eliciting nervous power in support of the nervous functions. The relation which the iron of the red blood-disks holds to the inspired air, places it second in importance only to the oxygen with which it is connected in the circulating fluid, and at once suggests one obvious mode of restoring the blood to its normal standard; thereby again contributing to place the organs severally in that harmonious relation through which health is maintained. . . . When the blood has become impoverished, the *heart's texture attenuated*, with manifest general debility, my observation would decidedly lead to the administration of chalybeates: viz., in cardiac palpitation, in conjunction with atonic dyspepsia, uterine derangements, hysterical or other nervous maladies; and when manifested in spanemic individuals of lymphatic or nervous temperament, and relaxed habit; in disposition to *syncope*, with much præcordial anxiety, attributable to deficient nervous energy, from a depressed condition of the nervous system, in which the heart participates in common with other parts, or referrible to impoverished blood, etc.; in *angina pectoris*, when apparently unconnected with structural alteration, or, if thus associated, partaking of a passive character. Chalybeates are also indicated in *structural* disease of the heart, in passive dilatation, with normal or attenuated parietes, or with predominance of dilatation over hypertrophy, if this exist (more immediately indicated by quick and clear sounds); consecutive dropsical affections, with leaden, pallid, or tumid countenance; paroxysms of orthopnoea or syncope, and copious expectoration. . . . Of two evils, I am disposed to consider mechanical (valvular or other) lesion, of less moment than direct loss of power in the muscular walls of the heart, whence more immediately proceeds prostration of the system generally. Indeed, it is peculiarly significant to observe how individuals cling to life, whose heart may have undergone extensive and irreparable injury, provided the impoverished blood admit of reconstruction, and the general powers be duly maintained. In no department of therapeutics is there greater occasion for sound physiological views of the animal economy, *as a whole*, than in cardiac affections, in which, moreover, the nicest discrimination may be requisite to decide where the lowering system must be abandoned, and tonic treatment had recourse to. I believe the former plan has not seldom been productive of fatal consequences, especially in cachectic habits. . . . The intimate relation obtaining between the circulating and nervous systems, at once serves to denote the mode of production of neuralgic affections of the heart, and to indicate the suitable treatment, when disorder co-exists in either or both. . . . The influence of *malaria* in producing neuralgic disorders, rheumatism, and associated cardiac disease, *by originating a deteriorated condition of the blood*, and a depraved habit, offers a wide and most interesting field for investigation."

With reference to the condition of the blood giving rise

to, or accompanying, certain cardiac or aneurismal diseases, it may be considered as originating in an imperfect elaboration of the blood-plasma, or other reparative constituent; the constitutional vice in the organs engaged being related to defective assimilation and renovation, rather than to change connected with the process of decay, the result of decomposition and rearrangement of the elementary constituents, independent of any further addition *ab extra*. The term "degeneration" as now used, appears to imply but one purely chemical source of textural change, but may with equal (if not greater) probability be referred to inadequate renewal or reproduction of tissue, arising out of abnormal conditions of cell-growth, and defective formative power in the in-coming nutritive pabulum. Chemical authorities are at issue as to whether or not azotised and non-azotised blood-constituents are respectively convertible; the animal organism being, however, pre-eminently a reducing apparatus. Now, although the myoline of muscular fibre becomes replaced by oily particles, in fatty metamorphosis, we have hereby no positive (only analogical or presumptive) proof of a conversion of the former into the latter having taken place. An excess of adipose material, favourable to fatty deposition, may obtain from its *decreased consumption*, through inaction of the liver, lungs, skin, and kidneys. Again, excess of oily constituents may result from *conversion* of the more animalised components of the tissues, in their removal from the system by the agency of the liver, as stated by M. Bernard. This, however, is effected by glandular activity, and bears little analogy to that change, which ensues in organic matter removed out of the sphere of action of the living organism. In the latter case, the play of chemical affinities, operative in the conversion of fibre into fat or adipose, would seem to require the presence and co-operation of air and moisture. This conversion does not ensue when, as in the process of preserving meat, oxygenation is prevented by the exclusion of atmospheric air; the changed condition of the fibrous and other tissues by the cooking process not of itself precluding, though retarding decomposition. Fatty transformation may be said to take place, for the most part, under very different conditions, too numerous to specify here, but sufficiently obvious in the body during life. Blood-fibrin differs from the fibrinous basis of muscle, according to Strecker, in being more highly azotised; in its behaviour with a dilute acidulous solution, in which it gelatinises, but does not dissolve; and in not being dissolved by an excess of alkaline precipitant; the reverse holding with reference to the fibrin of muscle, which approximates to albumen in composition and chemical relations. The fibrin of blood would appear to be the nutritive constituent of the simple fibrous membranes, such as the elastic arterial tissue, pericardium, etc.; its amount in the blood being adequate to this, but not sufficient for the growth and repair of the muscular system; while the large proportion which the albuminous constituent of the blood bears to the other ingredients, seems to denote it to be the agent for the fulfilment of the latter office. Now, if we consider the blood to be defective in the amount or elaboration of the albuminous constituent, the other ingredients said by Heller to be required in the process of healthy cellular nutrition—the calcareous salts and oily pabulum—being either normal or aberrant, we may account for the falling away in the cardiac and vascular tissues, simply as the result of mal-assimilation—to employ a term long in use, and conveniently expressive of a recondito operation.*

* Professor Schultze has lately determined some points of interest in connexion with this subject.

1. Fatty matter is conveyed into the system as fat, *ab extra*, in drops or fine divisions.

2. It is produced by conversion of non-azotised or non-fatty food.

3. It is produced from nitrogenous food, as in diabetes.

4. It is produced from the tissues only in disease.

Fat in excess leads to disease. It is increased during the resolution of pneumoniae exudation. It may be present in considerable amount in the blood, or is detectible by the microscope.

In opposition to Virchow and Reinhardt, who assert that every kind of cell can undergo fatty metamorphosis, Schultze affirms that this is connected with the quantity of material, and is only an index of a previously commenced change, depending upon some peculiarity in the nature and time of origin of

It would be interesting to determine whether the salts of lime and the organic acids are defective in, or absent from the urine of those in whom deposits of cholesterine and calcareous matter take place in the valves, on the surface, or in the walls of the heart, as well as throughout the circulatory apparatus. We want precise information on these most important points. In the meantime, we can trace to some extent the disjointed and remote links in this morbid chain: witness the association and interdependence between malaria, rheumatism, abnormal deposits in the tissues, and defective nutrition, secretion, and excretion, through biliary, splenic, and renal *remora*, as evinced in some of the preceding illustrations. The centre of the circulatory apparatus of course bears, in many cases, the greatest strain on its function; and, in consequence of its primary importance to the organism, its disease more immediately leads to a fatal issue. The tendency to this result may be often masked till death take place; and it may be doubted whether we possess any certain or even probable indication of the imminence of this event, those premonitory symptoms assigned as diagnostic being often absent up to the last moment of life, and the *post mortem* examination giving the first demonstration of the existence of disease. The cases of the late Dr. Chalmers and of other eminent men are memorable instances in point.

With respect to fibrinous or albuminoid deposits in the parietes of the heart or blood-vessels, or on their lining membrane, there are many facts, derivable from humoral pathology, which would indicate such deposits to be of not unfrequent occurrence, and not unlikely to materially interfere with the circulatory function. It may be recollected, that the fibrinous constituent of the blood is far from being uniform in its chemical composition, under various morbid phases; and to this deviation, as well as to its varying proportions in the circulating fluid, is referrible occasional structural regression in the tissues. The muscular fibres of the heart and blood-vessels approach blood-fibrin in composition, though not identical with it; and the heart, in common with other involuntary muscles, has little cellular tissue entering into its structure. Those diseases, such as rheumatism, scorbutus, certain forms of chlorosis, etc., in which the amount of fibrin in the blood varies, are not unfrequently associated with cardiac, aneurismal, or hæmorrhagic affections; these latter diseases being no doubt closely connected with structural deviations in the tissues or lining membrane of the vascular apparatus.

[To be continued.]

ON DISTICHIASIS.

By WHITE COOPER, Esq., F.R.C.S., Senior Surgeon to the North London Eye Infirmary, and Ophthalmic Surgeon to St. Mary's Hospital.

SINCE the publication of my communication on Distichiasis, in the ASSOCIATION JOURNAL of February 18th, my attention has been called to a very able paper by Mr. Wilde, of Dublin, on "the Causes and Treatment of Entropium and Trichiasis";* and I regret that, when writing on the subject, I should have overlooked the following remarks, as they are the result of extensive experience; for, in Ireland, affections of the eyelids appear to be very common among the lower orders. Mr. Wilde says: "The fact of an additional growth of hairs has been denied; and it is asserted that, 'although they issue from the wrong place, and grow

the nucleus. Fat may pre-exist in the cells, as well as arise from the transformation of protein constituents. The evolution of cells into granular (fat-containing) cells is not a *retrograde* metamorphose. The vitality of a cell, as of the containing organ, is *increased*; the fat being plastic.

Ingested fat serves especially for respiration, and occasionally for the nutrition of organs, assisting in cell-formation. Fatty degeneration of organs and adipose metamorphosis of their special tissues cannot be dissociated.

Several of these deductions are irreconcilable with, or militate against, the prevalent doctrine respecting "fatty degeneration"; and serve to confirm the views above taken, as regards the mode of production of this abnormal condition.

* Contributions to Ophthalmic Surgery. Part II. Dublin, 1844.