SUGGESTIONS FOR THE MAKING OF PATHOLOGICAL CATALOGUES.

*Presented to the Pathological Section of the Association
at Cambridge.*

By SIR JAMES PAGET, Bart., F.R.S.,
Consulting Surgeon to St. Bartholomew's Hospital; President of the
Section; etc.

WHILE writing the Catalogue of the Pathological Museum of the Royal College of Surgeons, and the first two volumes of the Catalogue of the Museum of St. Bartholomew's Hospital, I had many occasions for studying how, with the help of catalogues, museums of pathological anatomy may be made most useful. More lately, my attention has been recalled to the same subject in the revision of the College Catalogue; and I venture to think it may be useful if some of the rules which seem good in such work be made generally known.

It is said, indeed, by some—but chiefly, I think, by those who desire to find reasons for not studying—that specimens of diseased structures are so altered in their preparation for a museum, that they are quite unfit for the teaching or the study of pathology. The same objection might be made to the study of botanical specimens in an herbarium. In both cases alike, the changes produced by preparation are so far uniform that anyone accustomed to recent specimens (and no others should study either herbaria or pathological museums) can allow for them, or “discount” them. Just as an anatomist can discern, in a recent specimen of disease, the healthy structure, so, but often much more clearly, can the pathologist or any careful student discern, in the prepared specimen, the chief characteristics of the disease. Or, as none know better the use of dissecting dead and decaying bodies than those who operate on the living, so may all find, when they are studying at the bedside, the most potent help in their memories of what they have seen in the museum. Or, even without argument, it may suffice to answer to those who depreciate pathological museums and catalogues, that they who study in them carefully do find them very useful.

The best purpose for a pathological catalogue to fulfil, and that within which many other purposes may be served, is, that it should enable a student to study in the museum a complete series of illustrations of both general and special pathology. As he might read and see in a book with abundant plates, so, with more advantage, he should be enabled, catalogue in hand, to study regular series of described specimens of the effects of injury and disease. He should be as little as possible disturbed by the necessity of moving from one part of the museum to another, or of consulting an index, or of searching among confused groups of letters or numbers.

Of museums generally, I need to speak only in relation to the arrangement; for this and the catalogue of each must, of course, be in accord.

If the museum be sufficiently large and various, it should have, in a first division, some well selected specimens illustrating general pathology; and, in a second and much larger division, those illustrating special pathology. In small museums, all the specimens had better be in series arranged, as for special pathology, according to the organs specially affected.

The specimens for general pathology may be arranged in series corresponding with the sections or chapters of any of the books upon the subject which, at the time of making the catalogue, are of most authority or in most general use. Those for special pathology should be in series, whose order may be determined by that in which the several parts of the body are described in the most esteemed works on descriptive anatomy;* and in each of these series the specimens should be arranged after the same manner as those in the series for general pathology. But the order in which the series are placed is less important than that, whatever order be adopted, it should be, as closely as possible, adhered to; and that the order of the general series should be repeated in each of the special ones. If, for example, the order of part of the subjects

in the general pathology be hypertrophy, atrophy, repair, and so on, then the order in each series of special pathology should show the same succession of changes; e.g., hypertrophy, atrophy, repair, and so on, in bone, in muscle, and in each following part or organ. Thus arranged, the specimens may be studied in due order as, in some great book, all the subjects of both general and special pathology might be.

The arrangement of the catalogue should, of course, agree with that of the museum; but an exception must be made for some instances in which, for convenience of space, it is necessary to put in different parts of the museum the specimens of diseases of the same part. For instance, among the specimens of diseases and injuries of the bones, or of the joints, the greater part are kept “wet” in bottles placed on shelves; but some must be “dry”, and these may need to be in cabinets far apart from the shelves. When this separation of specimens must be made, the descriptions in the catalogue should not be similarly separated; for, although a catalogue has its chief use in the museum, it is not, when printed, useless as a book of reference in libraries. For this method of reference, it is very inconvenient that the descriptions of different specimens of similar diseases should be placed in different volumes, or in different parts of one volume; and the inconvenience of the descriptions being all together, while the specimens may be far apart, can be amended by having, in the copies of the catalogue which are kept in the museum, marginal MS. notes telling where the separated “dry” specimens are to be found. Similarly, notes may be placed on the shelves, indicating the places of any specimens that cannot be put on them.*

There may be many opinions as to the best method of numbering specimens, and many reasons for each opinion. I think it certain that, on the whole, it is best to have only one series of numbers marked on the specimens or the bottles containing them. With these numbers, those in the catalogue must, of course, correspond; but, in the catalogue, there should be the division into series, which it is not necessary to repeat in the markings of the specimens. The plan may be the same as that of a book in which the pages are numbered in one continuous series, though its contents are divided into chapters and parts. The beginnings and the sequence of the chapters can be marked in an index, and can be found in the book at least as easily as if each page were marked with the number of the chapter and the page in that chapter to which it belongs. So, in the museum and its catalogue, the order and place of the several series can be marked as chapters in the index; the specimens, like pages, can be marked in one series of numbers; and the series may be indicated by labels on the shelves, as they are in the college museum.

With this, as with any other plan, there must be seeming confusion when, after the arrangement and the catalogue are complete, new specimens are added. Such confusion is inevitable. It is least when new specimens are put in places determined by the facts which they illustrate, and are marked with letters (A, B, C, etc.) added to the numbers of those next after which they stand. Manuscript descriptions of the new specimens must be put in interleaved or supplemental catalogues; and the constantly increasing disorder must be endured till a new catalogue can be made and the whole of the specimens can be renumbered.

In a catalogue thus planned, chiefly, for those who wish to study the whole museum, as they might study an illustrated system of pathology, it is easy to introduce many things useful to others. Some desire to find as many specimens as possible of some one injury or disease, or of the pathology of one part, or even of one bone. Provision for these may be made by reference-notes or numbers, so planned that anyone, having found, in their appropriate place, the chief or typical specimens of that which he wishes, may thence be directed to all the nearly allied specimens in all other parts of the museum. For example: if one wishes to study ulceration, the specimens illustrating it in its due place, in the division of general pathology should suffice to show the general characters of the most important visible parts of the process. But many facts concerning ulceration would be illustrated in specimens showing its effects in different parts or organs. In order to make full use of these, anyone, having looked through the descriptions of specimens of ulceration in the division for general pathology, should find, at their end, an arranged list or index of all or, at least, of all the best specimens of ulceration in other parts of the museum. Similarly, after the descriptions of hypertrophy or of abscess in the general series, there should be references to the best specimens of hypertrophy of bone, of muscle, of heart, etc., which are in the several special series devoted to those parts. And return-references should be made, after the de-

* In the College Museum, the special pathological series are arranged in the same order as the physiological; and in any similar great museum this plan may be the best.

* In the College Catalogue, a separate volume is devoted to “dry” specimens; but it is proposed to correct this error in the new edition. Of course, the number of specimens separated from the regular and continuous placing according to the numbering should be as small as possible.

scriptions of the special, to those of the general series; e.g., if hypertrophy in the general series be illustrated by a heart or a bone, these should be referred to at the end of the descriptions of diseased hearts or bones in their proper special series.*

Again, if any one wishes to study (say) the diseases of articular portions of bones, he should find good specimens of them in an appropriate part of the series of diseases of the joints; and in the catalogue, after the descriptions of these specimens, or of all in that series, there should be references to all of similar kind included in the series of diseases of bones, or in that relating to general pathology, or in any other part of the museum. Similar cross-references may increase the utility of every series. A specimen among diseases of the urethra may illustrate some lesser or consequent disease of the bladder; or one of the bladder may illustrate the pathology of the urethra. Each of these should be referred to from the series in which the other is described. By such cross-references, the value of the museum may be increased nearly as much as it would be by the addition of as many specimens.

Nearly the same end may be gained by the insertion of a large general index to the whole catalogue, or to each volume. But I think that this is less convenient and less complete; unless, indeed, the indices can be as good and complete as are those of the St. George's Museum. And the use of cross-references does not exclude that of indices; some, indeed, are essential to the complete utility of the catalogue. There should be a general index at the beginning or the end, showing the titles and the order of the several series, or their divisions; and the numbers of the first and last specimens in each; and preceding the descriptions of each series should be an index showing the arrangement of the specimens in that series, and the numbers of those illustrating each chief fact or principle. Thus each series should have, at the beginning of its portion of the catalogue, an index to its own contents; and at the end, by the method of cross-references, an index to all the specimens illustrating its pathology in other parts of the museum.

With helps such as these, it should not be difficult for any one to ascertain quickly whether a museum contains specimens of any disease of any part that he may wish to study. The extent of each index must be determined chiefly by that of the museum and of its several parts. For a small museum, it may suffice if each principal disease of each part be indicated; for a large one, the references may need to be to every variety and stage of each disease, and to the several diseases of each bone or joint.

In a very large museum, it may be possible to make good series of specimens for the orderly illustration of the principal specific or constitutional diseases, such as scrofula, syphilis, gout, the eruptive or other fevers. But it is very difficult to make such series complete enough and typical enough to be instructive, and of some the illustrations would be too incomplete. In the absence of such series, the best thing seems to be to have in some part of the catalogue, either at the end of the general index or after the description of the illustrations of inflammation, an index to the specimens of specific inflammation or other changes which may be found in different parts of the museum.

Such are the chief general rules which I can recommend for the arrangement of a museum and its catalogue; and the arrangement should always be complete before the catalogue is printed or finally written.

Now, for the description of the specimens, it is hard to give rules; as hard as it might be to make many rules for the writing of story-books; yet I venture to mention some as chiefly to be observed for the purpose of making the catalogue useful to students.

As a general rule, the description of each specimen should state all the facts to which the attention of the observer should be directed, provided they are still to be seen in the specimen described. Statements as to what cannot now be seen, such as microscopic appearances or conditions observed when the specimens were fresh, should be added, if at all, in smaller type.

If there be many nearly similar specimens, the best one or two should be placed first, and fully described; for the rest, the conditions in which they differ from these, or the facts which they show more clearly, should be added to a statement of their general similarity.

The names given to the diseases shown in specimens should be those used by the chief pathologists of the time; but it is often advisable to give also, in either parenthesis or note, one or more of the names by which the disease was called at the time of obtaining the specimen, or by the person who obtained it.

The scientific and technical terms employed in the descriptions

* If there be not a division for general pathology, its place should be supplied by a systematic index referring to those specimens in the special series by which the general principles of pathology may best be studied.

should be those generally used by the best authorities of the time; but, in some instances, in which the terms may be deemed transitional, or in which older terms are not commonly disused, one or more of these should be inserted as synonyms. This use of synonyms should be made clear. The same thing should not, without notice, be called by different names; e.g., aortic valves should not be described in one place as ossified, in another as calcareous, in another as cretaceous.

The guarded use of synonyms in descriptions of some specimens may add to the value of museums by giving them an historic interest. Many of the Hunterian specimens in the College Museum have their value. One, which Hunter marked *scrofula*, and which is a soft cancerous mass, tells of the difficulties of diagnosis in his time. So, the tumours which Sir Astley Cooper called "chronic mammary"—a name now nearly forgotten—will still show what he meant, and will still make his clinical observations valuable. And so, in the Guy's Museum, are original specimens of "Bright's disease". The time will come when pathologists may ask, What was Bright's disease? for, generally, the use of a personal name for a disease tells of a very incomplete pathology; and, with advancing knowledge, the name recedes, and its meaning is forgotten or mistaken.

Important facts in the history and progress of medicine may thus be preserved in museums, giving additional value to specimens which are of deep interest as memorials of the men of renown in long-past times.

Lastly, concerning the addition of histories of cases to the descriptions of specimens in catalogues, it is even more difficult to give rules than for the descriptions themselves. It is useless to try to combine the pathological catalogue and the clinical case-book; in such a combination neither part is likely to be carefully read. As a general rule, it will suffice, I believe, if the cases added to the descriptions tell briefly, in addition to the sex, age, and occupation of the patient, the duration of the disease or of the consequences of the injury shown in each specimen, and those clinical facts which were in clear relation with the facts still seen in it. And, certainly, this may suffice, if a more complete record of the case can be found in any published work or journal, or in an accessible case-book, or in such a book of manuscript "Cases and Dissections" as should be kept in connection with every pathological museum. References to such records should, of course, be added to the descriptions of the specimens to which they relate.

Nearly every museum contains certain "mirabilia". To these, a more than usually liberal allowance of space in the catalogue may fairly be granted; but it does not seem desirable to deviate far from the general plan in order to draw attention to them. The wonder-seekers are not those to whom museums are most instructive.

PERIPHERAL NEUROGLIOMA. — Dr. Axel Key of Stockholm describes, in the *Hygiea* for 1879 (*Nordiskt Medicin. Arkiv*, Band xii), the microscopic structure of a nerve-tumour removed from a journeyman tailor, aged 31, who was discharged cured after a stay of fourteen days in hospital. The tumour had commenced as a small knob in the soft parts in the neighbourhood of the left ala nasi, and had grown in the course of a year to the size of a plum. The extirpated tumour was encapsuled; it was not adherent either to the skin or to the subjacent bone; it was greyish-red in colour, homogeneous, and rather soft. After hardening in Müller's fluid, it appeared to be of tolerably firm consistence; it was sharply defined, with smooth round projections, and was of somewhat irregular flattened shape. To one of the projections were attached some shreds, like connective tissue. Macroscopically, it was like a sarcoma, and had been diagnosed as such in the hospital. The microscope, however, revealed an entirely different structure; namely, very large cells, which completely resembled ganglion-cells, and were enclosed in perfectly developed capsules, the interior of which had the same appearance as the capsules of ganglion-cells. The cells were apolar; and not only one, but two or three, or even more, were contained in the same capsule. In the shreds connected with the tumour was found a nerve broken up into fine fibres of unequal size, probably a portion of the infra-orbital. On examining these branches of nerve, it was clearly seen that the large ganglionic elements of the tumour were developed from the nerve-fibres. Thus there was in this case a true glioma, which throws light on the hitherto unsolved question, whether a tumour of this kind can be developed on a peripheral nerve. Only one case of glioma is described in medical literature, viz., by Loretz in Virchow's *Archiv*; but the tumour, which was of the size of an egg, had proceeded from a pre-existing ganglion, and was thus a simple hyperplastic new growth. The case reported by Professor Key renders it certain that a glioma may be developed from a peripheral nerve, altogether independently of preceding ganglionic formations; and hence, in order to avoid all misunderstanding, Dr. Key calls this new growth "*neuroglioma verum periphericum*".