limited or continuous with some other part. If limited, its limits must be defined; if not, its extension must be indicated.

2. Every cavity is either open or closed. If closed, the continuity of its parietes must be demonstrated; if open, its communications must be shown.

3. Every elongated part has a middle and two extremities; not only the former, but the latter must be represented.

§ 162. Figures—original ones especially—should be multiplied and descriptions reduced. In descriptive anatomy, whether human or comparative, the text should be subordinate to the illustrations. Some treatises (Charles Bell, Meckel, Milne-Edwards, etc.) seem to have been prepared upon the idea that the description is essential and the figures merely supplementary; on the contrary, words should be employed only when pictures will not suffice—that is, for explanation, commentary, generalization, hypothesis, and manipulative directions.

The arguments for the multiplication of figures may be summarized as follows:

1. A figure is usually a guaranty that something like the object represented has been seen, at least by the artist, and that a certain amount of time has been devoted to its contemplation.

2. The information conveyed by a figure is more real, and likely to be more lasting, than that which is expressed in words. In respect to reality and impressiveness, the sources of knowledge may be ranked as follows, in an ascending scale: (1) Description; (2) picture; (3) model; (4) object seen; (5) object handled; (6) object personally prepared. The picture is thus intermediate in value between the thing itself and a description of it.

3. A figure, if clear and properly placed, is more readily understood than a description, and a saving of time is thus effected. It may be easier for the author to write than to draw, or even than to supervise a drawing, but his personal inconvenience or loss of time should not outweigh the gain to his readers. This applies particularly to dictionaries, cyclopedias, and journals, which are commonly read or consulted in haste. Editors and publishers would find eventual profit in offering to authors the fullest encouragement to employ illustrations so far as possible and curtail their descriptions in proportion. That it is rather the exception than the rule for such encouragement to be offered is probably due to several causes: (*a*) Publishing houses have usually a staff of printers who must be employed, whereas the various processes involved in the making of pictures are commonly done outside at extra expense; (*b*) authors too often content themselves with carelessly made copies of "stock figures" instead of insisting upon original representations of objects prepared by themselves. Hence, on the one hand, the exceptionally liberal publisher is liable to get a poor return for any allowance made for drawings, and, on the other, the exceptionally painstaking author is apt to be told that, at best, the engraving will be done if he will furnish the drawings; and, if he cannot draw himself, their cost is likely to deter him from their introduction. In short, all the existing conditions work to the disadvantage of the reader, who gets but a "pennyworth of [pictorial] bread to a monstrous deal of [verbal] sack."

Before this state of things can be amended the authors of books and papers must see clearly the importance of illustration; to paraphrase an epigram as to the making of an index, the drawings should be made or personally superintended by the author, even if some one else has to write the text.

4. Figures usually occupy less space than descriptions conveying an equal amount of information. This means condensation, convenience, and economy in the present, and a due consideration for our successors in the not far distant future. Exact data are not accessible, but no thoughtful and public-spirited person (unless he be a publisher or printer) can contemplate without concern the logical results of the present rate of book-making activity.

§ 163. Borrowed figures should be fully credited, and all modifications, whether of size or features, explicitly stated. To copy is to compliment, but unacknowledged copying is theft, and unspecified change is misrepresentation.

The ill effects of omitting to state the source of a figure are two: (1) The originator loses credit to which he is justly entitled; (2) the reader may be seriously misled by the apparent duplication of some really unique feature or the confirmation of an error. For example, in the representations of the meson of the cat's brain by Leuret (Leuret et Gratiolet, Pl. V., Fig. 2), the pseudocele ("fifth ventricle") is made even more extensive than in man, reaching almost to the splenium. The figure is reproduced, without credit or correction, in Mivart's "The Cat" (Fig. 129). Whoever remarks the coincidence in respect to the pseudocele, but fails to note that one figure is simply a copy of the other, may naturally infer that the feature in question is normal, or at least not anomalous.

On the other hand, if informed that three of Mivart's figures (125, 126, 129) were copied from Leuret, the student might conclude that the representation of the base of the brain (Fig. 128) was derived from the same source. This would be most injurious to the reputation of Leuret, for the figure in question displays several features (the size and direction of the hypophysis, the disconnected fissure on the temporal lobe, the relations of the pons to the trifacial and abducens nerves) which it is safe to say never were observed in a feline brain.

Nor is it enough to give the sources of figures in a list, or in the preface, as in Huxley's "Vertebrated Animals"; so great is the labor of preparing an original figure that the acknowledgment of it should be equally as explicit as that of a verbal quotation.

Finally, in the case of modified figures, it needs but a moment's reflection to see that nothing short of an accurate statement of the nature and extent of the alteration can insure full justice to the originator.

§ 164. Drawings should be made as notes. In many cases an outline* drawing, even if hastily made, would convey to the maker, or any one else, at a future time more prompt and complete information than could be embodied in writing covering the same space. But the general employment of sketches, in addition to words, or in place of them, can hardly be looked for until children are taught to draw the intelligible objects about them before they are drilled in the making of the—to them—unmeaning pot-hooks of the alphabet.

§ 165. Figures should be more frequently employed in preliminary or incomplete publication. Probably one of the reasons for the comparative infrequency of pictorial representations of normal, abnormal, and pathological structures, especially in journals, is the difficulty, often the impossibility, of preparing a detailed figure in time for publication. But this need not prevent the early appearance of a figure, if only in outline, illustrating one or more points of greatest importance.

§ 166. Figures should be based upon photographs. Photography enables the anatomist to (*a*) record the appearances of perishable specimens, or of such as are in course of dissection; (*b*) insure the proper perspective; (*c*) save time and labor upon the part of the draughtsman, and thus either reduce the cost of the drawings or render a larger number attainable.

It is seldom that a single anatomical preparation is so perfect as to display all that is needed, and yet present no superfluous parts; often, too, certain points are to be brought out with "diagrammatic clearness," others being subordinated or omitted altogether. Hence, as a rule, the photograph forms rather the basis for the completed figure, and two or more similar preparations may be required for the elucidation of all the desired features.†

*There is a general and almost unconquerable predilection for shaded drawings. However advantageous shading may be in ordinary art as an element of finished pictures, and when merely a general effect is desired, in anatomical figures correct outlines are essential, and shading should be deferred until the last.

† A chief obstacle to the employment of photographs as a basis for figures of brains and embryos has been the difficulty of supporting such delicate objects within range of the camera in its usual horizontal, or nearly horizontal, position. This obstacle is wholly removed by the photographic table devised by Professor Gage and used by us in Cornell University since 1873. With this the camera may be readily adjusted to any angle, and brought into a vertical position so as to cover an object lying upon cotton, or in alcohol, or even alive in water. The apparatus is described and figured in *Science*, April 11th, 1884.

§ 167. Figures should be placed so as to be most readily understood and instructively compared. In comparing pictures of two or more houses, ships, or stoves, the architect, ship-builder, or dealer places them in such positions with regard to one another and his own eyes as may minimize the effort at mental transposition. If asked the principle on which he acts, he will probably say that no principle is needed, that he simply follows nature, experience, and common sense.

With few exceptions it seems to be reserved for those whose business is the contemplation of natural objects, who are credited with more than the average degree of intelligence, and who have at command the recorded experience of centuries, to disregard a matter whose simplicity is equalled only by its importance. In most works there is an utter absence of system. Seldom, indeed, are symmetrical figures placed otherwise than with the meson coinciding with that of the observer; but even this would be less likely to confuse than the apposition of transections of a subcylindrical mass like the myel with the dorsum above in one case and below in another.*

The prevalent carelessness in this regard may be ascribed to three sources: (*a*) The still too common idea that illustrations are of secondary importance; (*b*) the fact that most figures have been copied and thus placed without regularity, as in the original; (*c*) some time and trouble are required to reverse them.

§ 168. *General Rules for the Placing of Figures.*—These rules are based upon a consideration of the whole subject. There is probably no one of them to which exceptions may not exist; but such exceptions should always have a well-defined reason and not occur through inadvertence.

1. Figures should be coadjusted so as to facilitate comparison with one another and with typical structures in normal positions.

2. The dorsal side should be uppermost.

3. Direct views are to be preferred to oblique, though the latter are at times indispensable; *e.g.*, Figs. 720, 769, and 775.

4. Symmetrical figures, or parts thereof, should be so placed that the meson is vertical, *e.g.*, Figs. 664, 672, and 682.

5. When there is no choice between the right and left sides, the latter should be represented.

6. Of medisected organs, unless there is special reason for choice, the mesal aspect of the right half is to be shown.†

§ 169. *Designation of Parts upon Figures.*—The full technical names of parts should be given if possible. From the purely artistic point of view, of course, any extraneous line upon a picture is a disfigurement. But if it be once admitted that the primary object of an anatomical drawing is to convey accurate information, then, unless the shaded figure can be duplicated in an outline (as in Tiedemann, Vicq d'Azyr, and Dalton), there should be no sacrifice of the essential to the accessory.

It may be a question whether the names should be upon the parts (as in Gray), or at the sides of the figure and connected with the parts by lines (Gegenbaur). Upon the whole the latter method seems preferable, especially if the technical names are used.

§ 170. Abbreviations should represent technical terms; they should be uniform throughout the work, and be placed at the sides of the figure.

Four methods of designating parts by abbreviations have been employed: 1, By numbers and non-significant and ununiform letters, which may or may not be explained in the text (Owen); 2, by non-significant characters, uniform only in part, and explained at a distance from the figure (Reichert); 3, by uniform and significant, but partly vernacular, abbreviations (Parker); 4, by uniform technical abbreviations (W. and G.).

The advantages of uniformity in the use of abbreviations are obvious, but it is by no means easy to avoid the charge of ambiguity. Where uniformity is not attempted, care should at least be taken to avoid the use of the same abbreviation for the names of parts which are liable to be taken for one another. For example, in Schwalbe's two representations of the lateral aspect of the crura and adjacent parts (Figs. 280, 281), not only are opposite sides shown for no good reason, with some differences of detail which are puzzling rather than instructive; not only is the pons designated in one by *p* and in the other by *po*, and the tractus opticus by *to* in one and *tr.o* in the other; but the letters *tp* stand for the *tænia pontis* in Fig. 280, and in Fig. 281 for the *tractus pedunculari transversus* [cimbia]. Since these parts are similar in general appearance and direction, and only one appears in each figure, it is doubtful whether any but the most expert anatomist, thoroughly familiar with this somewhat obscure region, could escape at least a temporary misapprehension.

§ 171. Abbreviations should be explained in alphabetical order. The "practical" business man would exclaim, "Of course, how else should they be?" An "unscientific" child would adopt the alphabetical order with letters as he would the order of notation with numbers. But the super-scientific writer, especially if he be a German, scruples not to save a few moments of his own time at the expense of others, by giving the verbal equivalents of ten (Huxley, Fig. 19), fifteen (Balfour, ii., Fig. 271), twenty (Quain, Fig. 263), twenty-five (Schwalbe, Fig. 279), forty (Meynert [Stricker], Fig. 253), or even fifty-eight (Marchand, *Arch. f. mik. Anat.*, xxxvii., 331, 332) abbreviations, either in no recognizable order at all or as they occur upon the figure.* The time wasted by each consulter of the figure (not to mention the effect of just indignation) would nearly equal what it would have cost the author to place the abbreviations in alphabetical sequence.

Burt G. Wilder.

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BRAIN: PACCHIONIAN BODIES.—These granulations, once falsely called glands, were perhaps first mentioned by Willis (1676), then by Méry (1701), and almost simultaneously described by A. Pacchioni. They start as minute spheroidal, partially vesicular outgrowths (villi of Luschka) from the arachnoidal layer of the pia—where it bridges fissures as well as where it rests on the gyres,—retaining its epithelial covering. They must not

*If the fuller discussion of this subject in the New York *Medical Journal*, August 2d, 1884, be consulted, the following corrections should be made:
Explanation of Fig. 57, last line, transpose *antimesal* and *symmesal*.
Fig. 59, for *antimesal* read *symmesal*.
Fig. 64, for *symmesal* read *antimesal*.

† Even more objectionable is the omission of the original pagination upon the reprints of papers. The printer does not always realize the conditions and the author often remembers when it is too late.

be confounded with granulations of the choroid or ependyma, with vegetations notably in the cavernous sinus (Hyrtl, 1862), nor with granular (aciniform) conditions of the meninges seen in inflammations. They are often clustered, become pedunculated, penetrate the opposed dura, and finally project into the overlying venous channels, and even excavate (in part repel) the bone. They are usually most abundant opposite the middle of the falcial sinus—more correctly opposite the largest parasinual spaces—but may occur on both sides, along nearly the whole length of this sinus, beside the transverse and tentorial sinuses, and even beneath the latter, also in the temporal fossa opposite the trunks of the medidural vessels and the frequently present temporal sinus. They occur not rarely 3 cm., and even farther, from the long sinus along the line of large incoming veins after the latter have left the pia, and also farther out at one point near the frontal border of the parietal bone, probably where a medidural artery bends to connect through the skull with temporal vessels. Hence, in general, they occur opposite intradural blood channels of some size, and especially those subject to continual variations in calibre (pulsation, ebb and flow). Their prevalent growth toward and into venous spaces has led to the assumption that the granulations themselves were venous structures, or opened into such (Key and Retzius, Kollmann, and others; it is not true that Trolard claimed this). But it is now generally thought that the injection of the spaces through the granulations must have been effected by the rupture of granulation vesicles.* From the intimate connection of the older granulations with the spaces, they become darker colored; or, on tearing the two structures apart, flecked with blood. But the younger free corpuscles are pale, whitish.

The parasinual spaces are said rather to diminish with age, while the granulations certainly increase. Up to the twentieth year they are rarely developed to any extent. In congenital defect of the heart, they appear early and excessive (case of Lambl, 1860; one of the writer). However, at all ages continuous or intermittent compression of the brain space, of whatever origin, is the most frequent cause of their over-development. Under this head fall intracranial tumors of any kind or seat. Repeated congestion, as in chronic alcoholism, is also an accepted factor, doubtless acting mechanically. Various systemic troubles, as nephritis and diabetes, favor the enlargement of these bodies, possibly by unusual variations in the encranial pressure.

In view of all the facts—viz., that while these corpuscles regularly occur opposite intradural (extra-arachnoidal) blood channels not necessarily venous, their growth is especially favored on the one hand by venous stasis, on the other by pressure from the side of the cranial space—it is evident that they result from the oft-repeated local oscillation of the arachnoid. As the cerebro-spinal fluid is subarachnoidal, it, especially when under pressure, forces that membrane at its weakest points into any depression, as that beside a dilated vessel —*the granulations always grow away from the cranial cavity, never toward it.* When, then, the favoring condition—be that even negative instead of positive—relaxes, the granulations, to the extent that they have formed, press against and penetrate superimposed structures, the continuous alternation of the conditions as continually favoring the process. This, as we believe, clear and simple explanation suffices for all the main features of these little growths.

Pathology, Clinical History, etc.—(*a*) Like the wrinkling of the skin, the turning gray and falling out of the hair, and many other processes, the granulations themselves should be considered pathological only when they become excessive or develop prematurely. (*b*) Calcification or ossification of these bodies is not unusual. They may contain deposits of so-called brain sand and even fat globules. (*c*) Where they penetrate into blood spaces and even a sinus, they so far interfere with the return current, and also favor thrombosis (only one case of the latter, Förster's, has been attributed to this cause). (*d*) Foveæ glandulares, sharp depressions or excavations in the inside of the skull (preceding *e* and *f*), quite analogous to that seen in aneurism of a dural artery, are sometimes found. From their more or less intimate relations with the sinus walls, Allen advises avoidance of the middle line in all operations upon the skull cap. However, the diploë itself is never opened by these growths as a new layer of bone always forms around the foveæ. (*e*) Small flat elevations of the external plate of the skull, opposite the foveæ, and hence near the superior median line, are mentioned by many. (*f*) Very rarely complete perforation of the cranium occurs.

1. Case of Weber-Ribes (1819; v. Pozzi); hole small, and covered by ligamentous membrane. 2. Luschka (p. 116); perforation of squamous portion of temporal bone. 3. Lecat (v. Heincke in Pitha-Billroth); pneumatocele capitis; skull at some points perforated by granulations of the dura. 4. Demme (1862; v. Mastin, "Venous Blood Tumors of the Cranium." Reprint, 1886). "On the left of the sagittal suture (posteriorly) was a sharp-edged opening the size of a cherry stone, through which protruded a Pacchionian granulation." 5. The writer's observation. Man of forty; had suffered over three years from a tumor of the brain; autopsy, August, 1887. At the favorite spot near the frontal border of the parietal, somewhat removed from the sagittal suture, there was a clean-cut, complete perforation of the skull by Pacchionian granulations. This was circular, fully 0.5 cm. across, surrounded even in the diploic portion by smooth continuous bone, and covered by periosteal membrane. At the border there was a very trifling over-projection of the outer bone plate.

It is recognized that such perforations—even when incomplete—may, from local injury, lead to the formation of epicranial blood cysts, inasmuch as the causative granulations usually traverse some blood channel.

(*g*) In a few cases growths of this class have pressed on passing nerves, causing local neuralgic or paretic symptoms. Though it has been claimed that at times these growths induce headache, it is probable that they are then but co-effects of some other cause. (*h*) In animals generally these corpuscles are not present (brains of sheep, calf, rabbit, dog, and cat examined). Luschka found them only in the horse. *William Browning.*

* This is a matter of interest in connection with the theory of brain pressure (*Hirndruck*). Bergmann lays much stress on the continuous (or intermittent) discharge of cerebro-spinal fluid through the granulations into the venous spaces; while Adamkiewicz ignores or argues against the existence of such discharge.

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BRAIN: SIMPLE MENINGITIS.—(Pachymeningitis, πᾰχύς, thick; leptomeningitis, λεπτός, thin; simple, as distinguished from cerebro-spinal and tuberculous meningitis; meningitis of the convexity as distinguished from basilar meningitis.) Meningitis, in general, was first recognized as an affection separate from disease of the brain by Morgagni, 1760. Epidemic cerebro-spinal meningitis first attracted the attention of Vieusseux, of Geneva, 1805, and of Strong, North, Fish, Hale, Miner, and Williams, of our own country, 1806–1814, and was at that early period easily differentiated from affections limited to the membranes of the brain. Parent-Duchatelet and Martinet, 1821, first distinguished inflammation of the dura and pia mater, and Guérin and Guersant, 1827–1839, first distinctly recognized and set apart the tuberculous, granular, or basilar form of the disease. The first clear descriptions of the exclusively "simple" meningitis, from a pathological standpoint, are to be found in the works of Cruveilhier, 1830, and from a clinical standpoint, in those of Andral, 1834, and of Rilliet and Barthez, 1843. The recognition of the fact that simple meningitis is always a secondary affection is the result of the more accurate post-mortem observations of the last two decades, in the light of the recent investigations concerning infections, and the contributions from rhinology and otology.

That the various forms of meningitis are caused by specific micro-organisms was pointed out by the workers in bacteriology, especially by Koch, 1882, who demonstrated the tubercle bacillus in tuberculous meningitis; by Leyden, 1883, who found a diplococcus in the cerebro-spinal fluid and the pia, which Fraenkel and later Hauser showed to be identical with the pneumococcus; by Weichselbaum, 1887, who showed the presence of the diplococcus intracellularis meningitidis in epidemic cerebrospinal meningitis; and by Foà and by Bordoni-Uffreduzzi, who described a third and a fourth variety of the meningococcus.

Weichselbaum in Germany and Adenot in France, 1884, showed that meningitis occurring during or after an attack of pneumonia depended as a rule upon the same micro-organism that caused the pneumonia. Later observers have found meningitis frequently due to the pneumococcus in the absence of pneumonia. Thus the pneumococcus was found by Grasset in cases of meningitis occurring with inflammatory rheumatism; by Gabbi and Puritz in cases of meningitis associated with periarthritis and endocarditis; and by Ellehorst in a case of meningitis apparently due to fracture of the base of the skull.

The diplococcus intracellularis meningitidis is believed by some observers to be a variety of the pneumococcus, while others hold that it is quite a different organism. The latter view is held by Jaeger, who believes that the diplococcus intracellularis meningitidis is the cause of epidemic cases, while sporadic cases may be due to the pneumococcus. Jaeger proposes the name tetracoccus intracellularis for the micro-organism described by Weichselbaum as the diplococcus intracellularis, since this organism frequently appears in the form of tetrads.

In 25 cases of suppurative meningitis reported by Netter the pneumococcus was found in 18, the streptococcus pyogenes in 4, the diplococcus intracellularis in 2, and the typhoid bacillus in 1 case.

Next to the tubercle bacillus, the typhoid bacillus is most prone to cause purulent meningitis. Cases have been reported by Roux, Adenot, Kamen, Honl, Hintze, Fernet, Monsi and Carbone, Stühlen, Tietine, and other observers.

Next in the order of frequency, after the typhoid bacillus, is the bacillus coli communis, which has been found by Howard, Biggs, Sestre, Scherer, and others.

A rôle in etiology has been ascribed to the bacillus pyocyaneus by Kossel, Pesina, and Honl.

Among the pleomorphic bacteria that have been described in the exudates of meningitis are the cladothrix asteroides of Eppinger, and the actinomyces described by Moosbrugger, by Honl, and by Lenzine.

Pachymeningitis, inflammation of the dura mater, presents itself in two forms, external and internal, purulent and hemorrhagic, representing entirely different disease processes. Pachymeningitis externa, the hemorrhagic form, is really the result of a degeneration rather than of an inflammation; but in the absence of definite knowledge regarding the genesis of this disease, the two forms may be best studied together.

Pachymeningitis Externa.—Accidents or injuries which directly expose the dura, or effect its separation from the bones of the skull, with consequent extravasation of blood, whereby is implied, at least, a "hidden crevice" or some communication of the dura with the air, lead at once to inflammation of the outer lamella which may extend so as to involve all the rest of the membranes of the brain. Carious processes of the ear constitute an even more frequent cause of this condition. A mere microscopic breach in the thin wall of bone that forms the upper covering of the tympanic cavity will bring pus from the tympanum to the dura. So, also, caries of the ethmoid bone (ozæna) or other bones of the cranium (syphilis, carbuncle) may excite this form of meningitis; and even without caries, purulent inflammation of the mucosæ in the ethmoid and frontal sinuses may extend to the dura through the natural openings of communicating vessels. This complication has been noticed more especially in erysipelas after "mixed infection," whose nature it is to spread. As purulent pachymeningitis rarely remains confined to the dura, but extends, as a rule, to involve the pia mater, the symptoms, pathology, and treatment of this condition will be further discussed with leptomeningitis.

Pachymeningitis Interna (Consult Plate XV., Fig. 1).—The disease of the dura which merits most consideration, from its frequency, limitation, and recognizability in life, is that affection of the inner layer which is characterized by the extravasation of blood and subsequent development of an adventitious membrane, commonly known as hæmatoma duræ matris, and technically described as pachymeningitis interna hæmorrhagica. With these characteristics it is plain that internal pachymeningitis does not supply the requisite conditions, nor rise to the nosological dignity of an inflammation in the modern sense of the term. It develops oftenest independently of all infection, and should properly be discussed as a subvariety of cerebral hemorrhage.

The pathology of this affection remains as yet obscure. The early anatomists and clinicians were fain content with descriptions of the condition without venturing to express opinions concerning the nature of the disease. It was commonly held and taught that the disease consisted in the extravasation of blood, and the only question discussed regarded its situation. Thus Abercrombie and Andral, 1807, maintained that the blood was effused between the dura and the parietal layer of the arachnoid so called; while Houssard, 1817, located the extravasation in what was then, and for the sake of convenience is still, known as the cavity of the arachnoid. The hemorrhagic nature of the affection was nearly lost sight of when Bayle, 1843, considered the hæmatoma as an inflammatory product of the dura, but it was again restored by Durand-Fardel, 1854, who believed in the development and organization of a flat blood clot. Heschl, 1855, regarded the membrane as a highly vascular connective tissue, a view which Virchow, 1856, with his predilections for cellular pathology, elaborated into a hemorrhagic inflammation of the dura as the first process, and a subsequent infiltration of blood as the second. The authority of these pioneers carried their views with almost undisputed conviction up to our own times, when the studies concerning the nature and processes of inflammation and infection naturally diverted attention to the condition of the blood and blood-vessels as prime factors in the production of the disease.

That hemorrhagic pachymeningitis is not the expression of an ordinary inflammation is shown by the fact that no amount of irritation of the dura will produce it. Injections of ordinary irritants into and beneath the membranes of the brain of lower animals may be followed by purulent, but never by hemorrhagic, pachymeningitis. On the other hand, the injection of blood with all its constituents sufficed, in the experiments of Sperling, to produce the typical signs and lesions of the disease. The rôle of the fibrin in these cases is evidenced by the fact that a membrane was not developed after injections of defibrinated blood.

Internal pachymeningitis consists, then, in the extravasation of blood, the formation of a blood clot which, when the effusion is not too great or rapid, is flattened by pressure, to become subsequently organized into a membrane. In the first stage of the disease process, the thin layer of coagulated blood soon begins to show, in the separation of its fibrin, a meshwork which contains multitudinous blood corpuscles. At this time there is no apparent connection with the dura, whose epithelium remains intact. In the consolidation which continues,