

Literature.

Only publications are listed here that are directly related to the question of cortical parcellation and histological localisation. All other papers are cited in the main text (*274).

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Translator's References

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Glossary of Species Names

**Glossary of species names as used by Brodmann,
with their modern equivalent in brackets,
and their common English name**

(Letters in brackets in some of Brodmann's
species names indicate variations in his spelling)

- Anthropopithecus troglodytes* (*Pan troglodytes*) chimpanzee
Ateles ater (*Ateles paniscus*) spider monkey
Bradypus tridactylus (*Bradypus tridactylus*) three-toed sloth
Canis familiaris (*Canis familiaris*) dog
Canis lupus (*Canis lupus*) wolf
Canis vulpes (*Vulpes vulpes*) fox
Capra hircus (*Capra hircus*) goat
Cebus capucinus (*Cebus capucinus*) capuchin monkey
Centetes ecaudatus (*Tenrec ecaudatus*) tail-less tenrec
Cercocebus fulginosus (*Cercocebus torquatus*) mangabey
Cercopithecus caudivolvulus (*Potos flavus*) kinkajou
Cercopithecus fulginosus, probably a mistake for *Cercocebus fulginosus* qv
Cercopithecus mona (*Cercopithecus mona*) mona guenon
Chrysochloris (*Chrysochloris*) golden mole
Ctenomys (*Ctenomys*) tucu tucu

- Cynocephalus mormon* (?*Papio cynocephalus*, yellow baboon, or *Papio leucophaeus*, mormon drill)
- Dicotyles torquatus* (*Tayassu tajacu*) collared peccary
- Didelphys marsupialis* (*Didelphis marsupialis*) opossum
- Echidna aculeata* (*Tachyglossus aculeatus*) echidna
- Elephas africanus* (*Loxodonta africana*) African elephant
- Erinaceus europaeus* (*Erinaceus europaeus*) hedgehog
- Felis domestica* (*Felis catus*) domestic cat
- Felis leo* (*Panthera leo*) lion
- Felis tigris* (*Panthera tigris*) tiger
- Hapale jacchus* (*Callithrix jacchus*) common marmoset
- Hapale pen(n)icil(l)ata* (*Callithrix pennicillata*) black-eared marmoset
- Hapale ursula* (*Saguinus midas*) negro tamarin
- Herpestes griseus* (*Herpestes edwardsi* = grey mongoose) mongoose
- Homo* (*Homo sapiens*) man
- Hypsiprymnus* (*Hypsiprymnodon moschatus*) musk kangaroo
- Hyrax capensis* (*Procavia capiensis*) rock hyrax
- Indris brevicaudatus* (*Indri indri*) indris
- Lagothrix lagothrica* (*Lagothrix lagothrica*) woolly monkey
- Lemur macaco* (*Lemur macaco*) black lemur
- Lepus cuniculus* (*Oryctolagus cuniculus*) rabbit
- Macacus rhesus* (*Macaca mulatta*) rhesus macaque
- Macropus dorsalis* (*Macropus dorsalis*) black-striped wallaby
- Macropus pennicillatus* (?*Petrogale penicillata*, rock wallaby)
- Macropus rufus* (*Macropus rufus*) red kangaroo
- Microcebus minimus* (*Microcebus murinus*) mouse lemur
- Mus musculus* (*Mus musculus*) mouse
- Mus rattus* (*Rattus norvegicus*) rat
- Mustela foina* (*Martes foina*) stone marten
- Nycticebus tardigradus* (*Nycticebus coucang*) slow loris
- Onychogale frenata* (*Onychogalea fraenata*) bridled nail-tailed wallaby
- Paradoxurus hermaphroditus* (*Paradoxurus hermaphroditus*) civet
- Phalangista vulpina* (*Trichosurus vulpecula*) possum
- Phoca vitulina* (*Phoca vitulina*) common seal
- Pithecia satanas* (*Chiropotes satanas*) black saki
- Propithecus coronatus* (*Propithecus verreauxi*) crowned or Verreaux's sifaka
- Pterodicticus potto*, spelling mistake for *Perodicticus potto*, potto
- Pteropus edulis* (*Pteropus vampyrus*) large flying fox
- Pteropus edwardsi* (*Pteropus rufus*) Madagascar flying fox
- Saimiris sciurea* (*Saimiri sciureus*) squirrel monkey
- Sciurus indicus* squirrel (This species was not identified. *Sciurus vulgaris* = red squirrel; *Sciurus carolinensis* = grey squirrel)
- Semnopithecus leucoprymnus* langur (*Cercopithecus leucoprymnus* = *Presbytis senex*, purple-faced langur)
- Simia satyrus* (*Pongo pygmaeus*) orang-utan
- Spalax* (*Spalax*) mole-rat
- Spermophilus citillus* (*Spermophilus citellus*) ground squirrel
- Sus scropha* (*Sus scrofa*) pig
- Talpa europaea* (*Talpa europaea*) common mole

Tragu(a)lus minima (?*Tragulus meminna*) chevrotain

Ursus syriacus (*Ursus arctos*) brown bear

Ve(r)sperego pipistrellus (*Pipistrellus pipistrellus*) pipistrelle or common bat

Translator's Notes

- *1 Brodmann usually refers to it as "Laboratorium", but sometimes as "Institut".
- *2 Brodmann refers frequently to his seven communications - "Mitteilungen" - in the text, for they represent the initial publications of much of the material of his book. He was an editor of this journal for a number of years.
- *3 "Stiftungsdeputation der Stadt Berlin"
- *4 "Jagorstiftung"
- *5 See the Translator's Introduction, p.X on Brodmann's life to understand the considerable animosity shown him by Berlin University.
- *6 ie between white and grey matter
- *7 The last two refer respectively to studying axons by staining their myelin sheath or directly their neurofibrils.
- *8 Brodmann's references in the text, in his footnotes or in his own list of Literature are not consistent in terms of bibliographic style and abbreviations, or even of accuracy. I have standardised and completed them in my list of Translator's References, but have left them in their original form in the text, footnotes and the original Literature list. However, I have provided translations of the titles of books and papers, but not of journal titles. This first one is: "Histology and histopathology of the cerebral cortex with particular reference to paralytic dementia, senile dementia and idiocy".
- *9 "Contribution to the comparative histology of Ammon's horn" (ie: the hippocampus)

- *10 Brodmann uses the expression “man and animals” here, as he does mainly in the rest of the text, although he sometimes writes “man and other animals”.
- *11 The central sulcus.
- *12 “kommemorative”
- *13 Brodmann does not give a specific reference to Lewandowsky’s work, but I suggest his 1907 textbook in the Translator’s References.
- *14 Again, no precise references are given, but see the Translator’s References.
- *15 Brodmann here seems to foresee such modern developments as electron microscopy and immunocytochemistry.
- *16 No specific reference is given to Mott’s work here, but see my list of Translator’s References.
- *17 Better known in English as the stria of Gennari
- *18 Brodmann does not state who is the author of this phrase; in fact, the paper is by Niessl von Mayendorf (1908).
- *19 “*Areae anatomicae*”
- *20 See Lewis and Clarke.
- *21 Does Brodmann mean “Berlin”?
- *22 Presumably S. Loewenstein is meant; see Köppen and Loewenstein, 1905.
- *23 Given here as “E. Smith”, as Brodmann often does.
- *24 In his Tables 1 and 2, Brodmann gives his own Latin nomenclature, and German names for all other authors. I have retained Brodmann’s Latin, and anglicised the others.
- *25 Brodmann only begins his own bibliography at 1903; it is not clear what this reference is.
- *26 Meynert used “Körnerschicht” for “granular layer”, whereas Betz used “Kernschicht”.
- *27 Lewis (1878) states that the motor cortex is five-layered. He calls them first, second and third layers, ganglionic layer, and spindle layer. This does not agree with Brodmann’s interpretation of Lewis’s work.
- *28 Campbell (1905) in fact used the following list for cortex in general: Plexiform layer, layer of small pyramidal cells, layer of medium-sized pyramidal cells, external layer of large pyramidal cells, layer of stellate cells, internal layer of large pyramidal cells, layer of spindle-shaped cells. For calcarine cortex he used: Plexiform layer, layer of small pyramidal cells, layer of medium-sized pyramidal cells, layer of large stellate cells, layer of small stellate cells, layer of small pyramidal cells with an ascending axis-cylinder, layer of giant pyramidal cells (solitary cells of Meynert), layer of medium-sized pyramidal cells, layer of fusiform and triangular cells.
- *29 The terms used here approximate to those of Bolton (1900), which I reproduce, but not to those of Mott, which are best represented in Table 1.
- *30 “Studies of the human cerebral cortex”
- *31 Cajal includes the rabbit with the rodents, as does Brodmann himself later (see note *98). Although this is not accepted now, it was at the time - cf Hertwig, quoted several times by Brodmann.

- *32 Brodmann thus indicates that he has omitted some words. In his version of Cajal's text he has not copied these "separations" quite accurately, so I have added extra dots where necessary. Cajal actually says that structural simplification involves *not only* the number of nuclei, layers etc., but *also*, and *especially*, the morphology of the neurons. In the second quote, Brodmann misplaces his quotation marks, so I have corrected this.
- *33 "The phyletic development of the cerebral cortex"
- *34 Throughout, I give the modern English name for the animals Brodmann refers to; the species names he used, and the modern species names, are given in the Glossary on p.281.
- *35 The "pallium" is essentially the cortex, the outer "coat" or "mantle" of the cerebral hemisphere.
- *36 The opening quotation mark is missing in Brodmann's text.
- *37 ie: Haller (1908)
- *38 The common bats.
- *39 "inneren Feldgebiet"
- *40 Brodmann puts "Rhinnencephalon" in inverted commas.
- *41 "The development of the human brain during the first months"
- *42 Brodmann does not give it a name in the text, but in the legend to Figure 4 calls it "Rindenplatte", the modern cortical plate (see "Boulder Committee, 1970, in the "Translator's References". This also applies to notes *43 and *45.
- *43 "Randschleier", the modern marginal zone.
- *44 "Matrix"
- *45 "Innenplatte", the modern ventricular zone.
- *46 Brodmann uses this format for expressing magnification and section thickness, although he uses the then common form " μ " for the modern " μm ". Oddly, he does not tell us the meaning of the figures until the legend for Fig. 5! His standard section thickness is $10\mu\text{m}$, except in Figures 5 ($5\mu\text{m}$) and 28 ($20\mu\text{m}$), which may be mistakes.
- *47 In the rest of the text Brodmann sometimes uses the Latin, sometimes the German form for the layers; I have standardised on the English form throughout. See also the legend to Fig. 11. It should be noted that Brodmann's terms are more based on those of Meynert (1868) than on the other authors he quotes, especially in that layer II is usually considered by the others to be a "pyramidal" layer. See Table 1.
- *48 "Notes on fibrillogenesis and its relationship to myelogenesis". Brodmann's work on neurofibrillar staining helped him understand axonal distribution in the cortex, and was in parallel with the work of the Vogts on myeloarchitectonics, which dealt with myelinated axons in particular.
- *49 "Innenplatte"
- *50 "Zwischenschicht"
- *51 "Rindenplatte"
- *52 "The development of the human brain"
- *53 As far as possible I have utilised the terminology of the Boulder Committee (1970) for foetal cortical layers.
- *54 The first mention of his maps, to be described in detail in Chapter IV.
- *55 Not in fact all orders!

- *56 I give the common English names here; for the species names used by Brodmann and for modern species names, see the Glossary of Species Names on p.281.
- *57 “*Cynocephalus mormon*”: see Glossary of Species Names.
- *58 Not, in fact, an order, but a suborder of the primates.
- *59 A suborder of the carnivores.
- *60 Again, not an order.
- *61 In addition to this list, Brodmann mentions studies on other animals in the text: golden mole, ground squirrel, mole rat, tucu tucu, two other species of kangaroo, and one other species of flying fox, making a total of 62 species
- *62 Brodmann uses various spellings for “*pennicillata*” - see Fig. 29, and elsewhere.
- *63 Brodmann seems to have reversed the definitions of homo- and heteroge-
netic cortex here!
- *64 This view of the claustrum, originating with Meynert in 1868, would not be accepted by many, if any, modern neuroanatomists: Brodmann comes back to it frequently. Krieg (1963), p.243, describing the macaque brain, states: “The insula is easily defined and limited. It consists of that part of the cerebral cortex which is separated by a thin fiber lamina from the putamen, and which is underlaid by the claustrum”. But there is no suggestion of the claustrum being *part* of the insular cortex.
- *65 This legend is, curiously, placed after the four figures in question.
- *66 This section is labelled “1” by Brodmann, apparently by mistake.
- *67 “Lamina triangularis”
- *68 “Lamina fusiformis”
- *69 Although Brodmann refers here to a “Bergkänguruh” (“mountain kangaroo”), the species mentioned in Figures 15 and 82 is “*Onychogale frenata*”, a wallaby, but not the rock wallaby (*Petrogale penicillata*), which might be Brodmann’s “*Macropus pennicillatus*”! To simplify matters, I have translated “*Macropus rufus*” as “kangaroo”, and all Brodmann’s other “kangaroos” as simple “wallabies”. The full species names are recorded in the Glossary of Species Names.
- *70 “Seelenleben”
- *71 “nervösen Grau”
- *72 “Concerning cortical measurements” - Brodmann (1908e)
- *73 “other things being equal”
- *74 Brodmann uses the term “Affen” (“monkeys”). They do not form an order, and nor do the prosimians.
- *75 Misspelled “Risenzellen”.
- *76 Once again, there is some doubt about the species of “kangaroo” (here “Bergkänguruh”). See note *69.
- *77 The kinkajou is not part of the bear family.
- *78 Here, as elsewhere, Brodmann refers to him as “B. Lewis”. There is an obvious spelling mistake - “probable” - in the quotation; the phrase does not appear in either Lewis (1878) or (1880), nor in Lewis and Clarke (1878).
- *79 Spelled “Jakson”, another of several such misspellings.
- *80 Once again, Brodmann leaves us guessing as to which publication he refers, but see Jackson (1880).
- *81 Lewis (1878)

- *82 As noted already, Brodmann sometimes gives no references for his statements. Pierret does not appear in his Literature list, nor can I find the relevant reference. However, for the others in Footnote 6, see the Translator's References.
- *83 It is not clear to what the term "*Nucleus angularis*" refers.
- *84 Brodmann does not seem to distinguish between neurons and glia in his consideration of cell number and density.
- *85 See Berger (1900).
- *86 Compare the species names in Figures 50 and 59.
- *87 "Histological aspects of the neuron theory"
- *88 They are not in the medulla!
- *89 "bläschenförmig"
- *90 In the text, p.91, this is referred to as a guenon ("Meerkatze").
- *91 "*Edwardsi*"
- *92 Figure 69 is, in fact, labelled "Macacus rhesus".
- *93 In fact, it should be 71.
- *94 Is this *Cercopithecus mona*, referred to in Chapter I?
- *95 Capuchin monkeys do not form a family in themselves, but are part of the *Cebidae*.
- *96 Not considered an order now, but was by Hertwig, to whom Brodmann often refers.
- *97 "*Pteropus edwardsi* und *edulis*": see Glossary of Species Names, p.282.
- *98 The rabbit is not a rodent, but was classified as such by Hertwig. See note *31.
- *99 Brodmann uses latin forms (eg "*Regio postcentralis*") for the regions, and later for the individual areas, although he intermingles a number of German expressions also. For the sake of consistency I have anglicised all terms, including names of gyri and sulci, basing my choice on the literature, both contemporary and modern.
- *100 The olfactory region is also not shown.
- *101 "Angulus"
- *102 Given here as "Scheidelläppchen", presumably a mistake for "Scheitelläppchen".
- *103 Brodmann refers to this sulcus variously as "intraparietalis" and "interparietalis".
- *104 In fact Elliot Smith called it "visuo-sensory band".
- *105 "area postcentralis oralis"
- *106 In fact, his Plate I.
- *107 In fact "Z".
- *108 Brodmann usually uses the term "postcentralis", but here writes "retrocentralis".
- *109 A curiously truncated quote by Brodmann! In fact Elliot Smith continues: "depicted in fig. 1".
- *110 Brodmann adds a bracketed note within Elliot Smith's quotation to clarify that the area referred to is indeed the "frontal".
- *111 Although Brodmann here terms area 11 "prefrontal area", he later (1913) used "prefrontal region" for the whole of his present "frontal region". This has become of some significance in view of the importance of the prefrontal cortex to concepts of human intelligence and consciousness (see Elston and Garey, 2004).

- *112 “gyrus rectus”
- *113 This should presumably be “lateral”.
- *114 “The human brain”
- *115 This is presumably a mistake for Figures 85 and 86.
- *116 In the figure legend, Brodmann writes “parinsularis”, but uses “parainsularis” in the text.
- *117 “Areae profundae”
- *118 The quotation is from page 252, and really speaks of “thin cortex”!
- *119 Brodmann uses the term “Taenia tecta”.
- *120 “*Caput gyri hippocampi*” - Brodmann seems to be referring to the uncus here.
- *121 Respectively, “The human brain” and “The external morphology of the olfactory brain of mammals and man”.
- *122 The guenons.
- *123 The marmosets.
- *124 These figures are not unchanged from the third communication: although the areas depicted are the same, the format is different. They do appear, however, in the sixth and seventh communications (Brodmann, 1908a,b).
- *125 From the map in Figure 90 the “inferior precentral sulcus” seems to correspond to what has been called the “subcentral dimple”, a very small sulcus at the inferolateral end of the precentral gyrus.
- *126 There appears to be some confusion here. From the map in Figure 90 it seems likely that Brodmann means to say that the postcentral gyrus extends rostrally beyond the central sulcus onto the *pre*central gyrus.
- *127 cf p. 260, where he states that the arcuate sulcus is a “strict boundary”. (see note *269)
- *128 Probably the “precentral dimple”.
- *129 Area 17 may indeed be relatively larger in the cercopithecids, and other monkeys, but it can hardly be considered as absolutely larger. In 1913 Brodmann measured many primate species and found that in man area 17 represented some 3% of the total cortical area, while in macaque it was 12%, but that the human area 17 had an average absolute area of 3000 mm² or more, whereas the macaque had less than 2000 mm². However, chimpanzees and mandrills actually reached human absolute values. Considering the body size difference, these figures emphasise the relatively large development of area 17 in non-human primates, which is the point Brodmann is trying to make. See Elston and Garey, 2004.
- *130 Figures 98 and 99 are almost unchanged, with just an indication to area 51 added to them.
- *131 The letters that suddenly appear in the next sentence refer to Figures 100 and 101.
- *132 Referred to here as “M. und K.”!
- *133 Cercopithecids *are* anthropoids! He presumably means great apes.
- *134 The illustration of the slow loris does not, in fact, appear until Figures 134 and 135.
- *135 By “Area limbica posterior” Brodmann probably means “Area retrolimbica”, areas 29 and 30, to be described below.
- *136 “homogenen”: he presumably means “homologous”.

- *137 In fact, only areas 31a and 31b belong to the cingulate region, extending along the horizontal branch of the splenial sulcus. Areas 30a and 30b belong to the retrosplenial region, described in the next paragraph, as can be seen in Figure 103. Area 30b runs along the horizontal branch of the splenial sulcus, posterior to area 31a, while area 30a follows the vertical branch of the sulcus.
- *138 Although we are not told in the text, the prepiriform cortex is labelled “51” in Figure 103, and the amygdaloid nucleus is covered with six “A”s.
- *139 This should presumably be “central sulcus of primates”. The so-called cruciate sulcus in primates is, indeed, within area 4, on its medial aspect, as described by Campbell, 1905.
- *140 Brodmann presumably means “area 52” here.
- *141 Like Mauss, mentioned several times in support of Brodmann’s observations, Zunino was another of his colleagues at the Berlin Neurobiological Laboratory (see “Introduction”, p. 4)
- *142 Misspelled “cystologisch”.
- *143 Brodmann here draws attention to the importance of the *connections* of the areas he is studying.
- *144 Area 9 is described here as having a *complete* belt-like form, but in the next sentence as only a *partial* segment.
- *145 See Translator’s Introduction, and Henneberg (1910).
- *146 See Grünbaum and Sherrington (1901).
- *147 Oddly, Brodmann seems to have reversed his definition of “essential” and “non-essential” since introducing the terms in the previous paragraph. See also p.195, note *152.
- *148 In Figure 143, what Brodmann refers to as the “striate area” for the cat in fact includes much more than area 17 medially. See Otsuka and Hassler (1962).
- *149 Marmosets and lemurs are from the same order - primates.
- *150 In fact this is five times more!
- *151 “The cerebral cortex of the dolphin”
- *152 See note *147.
- *153 They are not all orders; eg ungulates, pinnipeds and prosimians.
- *154 “General morphology of organisms. Vol. II. General development (or embryology) of organisms”
- *155 “The olfactory brain. A comparative anatomical study”; “The external morphology of the olfactory brain of mammals and man”
- *156 “*taenia tecta*” and “*stria lanzisi*” - more correctly “*lanzisi*”
- *157 “Area praeterterminalis”. This is Brodmann’s area 25.
- *158 “Morphological studies of organisational principles of the body in nature, with particular reference to organs”
- *159 “Gegenstücke”
- *160 “Folgestücke”
- *161 “Cortex primitivus, Cortex rudimentarius, Cortex (heterogeneticus) striatus”. This “Cortex striatus” is not to be confused with the striate cortex of area 17, the “Area striata”.
- *162 Brodmann writes “Induseum griseum”
- *163 “The structure of the cerebral cortex”
- *164 “The phylogenesis of the rhinencephalon, the corpus striatum and the forebrain commissures”

- *165 It is difficult to see how these two figures can be “drawn in their natural size relations”, when they are not at the same scale.
- *166 “Comparative anatomy of the vertebrates with reference to invertebrates”
- *167 “Collected popular lectures in the field of development. Part 1. Functional specialisation (literally “Division of labour”) in nature and human life”
- *168 “Textbook of zoology”
- *169 “The battle of basic problems in biology”
- *170 “The position of comparative embryology in relation to comparative anatomy”
- *171 “Emergence and concept of natural historical method”
- *172 “indifferenten”
- *173 “Vorratsgebilde”
- *174 “Lectures on man’s place in creation and in the history of the earth”
- *175 Brodmann puts Huxley’s thesis as a quotation, but I have been unable to find it given verbatim. However, a very similar statement (his “Pithocometra-thesis”) is given by Haeckel (1898), p.12.
- *176 “Growth of human body weight at different ages and measurement of volume in organisms”
- *177 “Measurement of the surface of the cerebrum”
- *178 Henneberg (1910)
- *179 “Brain measurement using the compensation polar planimeter”
- *180 “Morphological and systematic research in birds. General considerations”
- *181 “The fibre architecture of the cerebral cortex in lower monkeys”
- *182 Mauss (1911)
- *183 I have been unable to find any papers on this topic in this volume. There was much debate at the time as to the homology of the “Affenspalte” - literally “ape sulcus” - with the lunate or simian sulcus of monkeys; see also Elliot Smith, 1904b.
- *184 Brodmann was later (1913) to take up the challenge of cortical localisation related to anthropology which, even in those days, raised lively polemic between those who postulated that possible racial differences in brain structure might relate to racial differences in intelligence or other cerebral functions. In fact, the enormous harvest of quantitative data on cerebral cortex of man and other mammals that Brodmann derived from this study far outweighs the racial aspects of his work, although he does not emerge as a supporter of brain structure being a basis for racial characteristics (see Elston and Garey, 2004).
- *185 Respectively “The present state of pathological anatomy of the central nervous system” and “Hypothesis of neuronal functional specificity”
- *186 “Histological and histopathological research on the cerebral cortex”
- *187 “Introduction to the histology and histopathology of the nervous system”
- *188 “A case of amyotrophic lateral sclerosis with degeneration of the pyramidal tract”
- *189 “An anatomical pathological contribution to the study of cortical motor localisation through three cases of amyotrophic lateral sclerosis with degeneration of the pyramidal tract traced with the Marchi technique from the spinal cord to the cortex”
- *190 “Progressive diseases of the motor pathways”
- *191 Campbell (1905), p.93. Brodmann’s attempt at Campbell’s title is “Histological Studies on the Lokalisation of the Cerebral Funktion”

- *192 Literally “Thalamus opticus”, as was the normal term at the time.
- *193 Slightly misquoted from Campbell (1905), p.85.
- *194 “On the anatomical basis of idiocy”
- *195 Respectively “On the anatomy, nature and development of microcephalic malformations” and “Structure of the cerebral cortex”
- *196 “Clinical and anatomical investigations of a special form of familial amaurotic idiocy”
- *197 “Familial amaurotic idiocy and related syndromes”
- *198 “Pathology and anatomical pathology of different forms of idiocy”
- *199 “Anatomical and clinical aspects of Tay-Sachs familial amaurotic idiocy with a consideration of related forms”
- *200 “Pathological anatomy of Huntington’s chorea
- *201 Probably in the sense of a “primary defect”
- *202 “Idiocy and epilepsy symptomatic of tuberous or hypertrophic sclerosis”
- *203 Probably best understood as “space occupying lesions”.
- *204 “The question of functional localisation in the cerebral cortex”
- *205 Respectively “A developmental deficit caused by the extirpation of circumscribed cortical areas” and “Experimental and pathological anatomical investigations of the relationship of the so-called visual cortex to the infracortical visual centres and to the optic nerve”
- *206 “Further communications concerning the influence of unilateral eye destruction on the development of the visual cortex”
- *207 “Contribution to knowledge of fibre crossing in the optic chiasma”
- *208 “Changes in the optic nerve and tract in diseases of the occipital lobe”
- *209 Respectively “Contributions on the histology of the cerebral cortex” and “Experimental anatomical studies on developmental deficits in the occipital lobe of the dog and cat caused by lack of visual stimulation”. See note *211.
- *210 Respectively “The behaviour of neuroblasts in the occipital lobe in anophthalmia and atrophy of the eyeball and its relation to vision” and “Contributions to knowledge of secondary changes in the primary visual centres and pathways in cases of congenital anophthalmia and atrophy of the eyeball in neonatal infants”
- *211 An interesting prediction of the future! See Wiesel and Hubel (1963).
- *212 “Contribution to the anatomy of the brain of deaf-mutes”
- *213 “The frontal lobe”
- *214 “The brain of deaf-mutes”
- *215 “Anatomical investigation of the human auditory cortex”
- *216 “Deaf-mutism and the auditory pathway”. Academic dissertation.
- *217 “Zell-Äquivalentbild”
- *218 “tektonische Äquivalentbild”
- *219 “Textbook of zoology”
- *220 See Introduction, pp. 5-7
- *221 “Ichbildung”
- *222 “Outline of a physiological explanation of psychic phenomena”
- *223 “The basis of physiological psychology”
- *224 For a modern view of percepts and concepts, see Changeux (1985).
- *225 “The functions of the cerebral cortex. Collected communications”
- *226 “Comparative anatomy of the forebrain of vertebrates”

- *227 Brodmann refers to Edinger and Wallenberg as “Edinger-Wallenberg”.
- *228 “Brain and soul”
- *229 Spelled “Evens” here.
- *230 A rather curious reference! L. Asher and K. Spiro were the editors of “Ergebnisse der Physiologie”, a journal started in 1902 to report “results” (“Ergebnisse”) in a wide variety of physiological disciplines. The reference should be to three papers by von Monakow on this subject - see Monakow (1902, 1904, 1907). The other reference is to Monakow’s “Brain pathology”.
- *231 “The present state of the concept of cerebral localisation”
- *232 “strengen Lokalisten”; “Halblokalisten”
- *233 “Experimental research on the properties and functions of the nervous system”
- *234 Another example of Brodmann’s frequent inadequate citations. I have not been able to locate relevant works by Carville, Duret or Soltmann.
- *235 “Gegnern” misspelled.
- *236 “Sammelpunkte” - literally “rallying-points”.
- *237 “Bernhard von Gudden’s collected and posthumous works”
- *238 “The question of localisation of function in the cerebral cortex”
- *239 See Grashey (1889).
- *240 “Sphären” - literally “spheres”.
- *241 “Körperfühlsphäre”
- *242 “Physiological and clinical brain research. Collected essays”
- *243 “Lectures on cerebral localisation”. See Ferrier 1890.
- *244 “Functional localisation in the cerebral cortex”
- *245 “Cortical psychosensorial centres”
- *246 “Visual disturbances after damage to the cerebral cortex”. The page number is wrong.
- *247 “Contributions to cerebral physiology”
- *248 “Physiology of the brain”
- *249 “Research on functional localisation in the human cerebral cortex”
- *250 “New concepts in the question of cerebral localisation”
- *251 “Collected essays”
- *252 “Memory as a supporting principle in the exchange of organic events”
- *253 Literally “medulläre”: probably here not actually referring to the “medulla” alone.
- *254 “Übungsfaktor” - literally a phenonemon due to exercise or practice, probably best expressed by the modern concept of plasticity.
- *255 “Die elektromotorische Region”. I have not expressed the idea of excitability by electric stimulation in this sub-heading, as it would have been rather clumsy, and is amply developed in the text.
- *256 “Morphological brain centres, with particular reference to morphological areas of the cerebral cortex”
- *257 ie the ventro-anterior nucleus
- *258 the ventroposterior nucleus
- *259 “Information on electrically excitable cortical areas in mammals”
- *260 Respectively “Clinical and anatomical contributions to the pathology of the brain” and “The projection of the retina on the calcarine cortex”
- *261 “The cortical visual centres”
- *262 “Loss of orientation, cortical blindness and mind blindness”

- *263 “Riechhirn”
- *264 “Remarks on the auditory cortex of the human brain”
- *265 literally “Struktur”
- *266 Respectively “The present position of aphasia” and “Pathology of the left temporal lobe”
- *267 “Zentrenlehre”
- *268 “Medianfläche”: Brodmann frequently seems to confuse “median” with “medial”.
- *269 Although on page 127/131 Brodmann states: “The rostral boundary of the (precentral) region coincides approximately, but not exactly, with the arcuate sulcus”. (see note *127)
- *270 “Extremitätenzone”
- *271 “Fokus der Sehsphäre”
- *272 This problem was to be resolved later with our understanding of primary and secondary visual cortices, especially in the cat - see Hubel and Wiesel (1962).
- *273 “A study of myelinisation in the cerebral hemispheres”
- *274 I have not added any references to Brodmann’s original bibliography, nor have I corrected or standardised them. Many are only partial, or contain errors. Their format and alphabetical order are inconsistent. It should be noted that Brodmann gave a number of other references as footnotes, and I have retained them in their relevant places in the main text. He also frequently referred in his text to other authors without giving any bibliographic reference; as far as possible I have identified relevant references for these, and incorporated them in the Translator’s References pp. 267-280, where corrected versions of Brodmann’s bibliographic references will be found.

Index

In this Index certain common terms (such as area, gyrus, layer, lobe, region, sulcus) occur so frequently that I have only given general references to the text or to a specific chapter. The index does not include bibliographic references, figure legends, or footnotes. References to animal species is limited to the most fully described ones (see the Glossary of Species Names, p297, for more details).

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