

**Bibliography of works cited in**  
***The Idea of the Brain* by Matthew Cobb**

- Abbott, A. (2018) The face detective. *Nature* 564:176-179.
- Abbott, L. (2006) Where are the switches on this thing? In J. van Hemmen and T. Sejnowski (eds.), *23 Problems in Systems Neuroscience* (Oxford: Oxford University Press), pp. 423–31
- Abbott, L. F. (2008) Theoretical neuroscience rising. *Neuron* 60:489-495.
- Abercrombie, J. (1838) *Inquiries Concerning the Intellectual Powers and the Investigation of Truth* (London: Murray).
- Abraham, T. H. (2002) (Physio)logical circuits: the intellectual origins of the McCulloch-Pitts neural networks. *Journal of the History of the Behavioral Sciences* 38:3-25.
- Abraham, T. H. (2004) Nicolas Rashevsky's mathematical biophysics. *Journal of the History of Biology* 37:333-385.
- Abraham, T. H. (2016) *Rebel Genius: Warren S. McCulloch's Transdisciplinary Life in Science* (London: MIT Press).
- Abrahams, N. (2018) The historical context of the computer metaphor of the brain. *Humanity Journal* 8 <https://novaajs.newcastle.edu.au/hass/index.php/humanity/article/view/49>
- Ackerknecht, E. H. (1974) The history of the discovery of the vegetative (autonomic) nervous system. *Medical History* 18:1-8.
- Adamsky, A., Kol, A., Kreisel, T., et al. (2018) Astrocytic activation generates de novo neuronal potentiation and memory enhancement. *Cell* 174:59-71.
- Adolphs, R. and Anderson, D. (2018) *The Neuroscience of Emotion: A New Synthesis* (Princeton: Princeton University Press).
- Adrian, E. D. (1914) The all-or-none principle in nerve. *Journal of Physiology* 47:460-474.
- Adrian, E. D. (1926a) The impulses produced by sensory nerve endings: Part I. *Journal of Physiology* 61:49-72.
- Adrian, E. D. (1926b) The impulses produced by sensory nerve-endings: Part 4. Impulses from pain receptors. *Journal of Physiology* 62:33-51.
- Adrian, E. D. (1928) *The Basis of Sensation* (London: Christophers).
- Adrian, E. D. (1932) *The Mechanism of Nervous Action: Electrical Studies of the Neurone* (Philadelphia : University of Pennsylvania Press).

- Adrian, E. D. (1947) *The Physical Background of Perception. Being the Waynflete Lectures delivered in the College of St. Mary Magdalen, Oxford in Hilary Term, 1946.* (Oxford: Clarendon Press).
- Adrian, E. D. and Matthews, B. H. C. (1934) The Berger rhythm: potential changes from the occipital lobes in man. *Brain* 57:355-385.
- Adrian, E. D. and Zotterman, Y. (1926a) The impulses produced by sensory nerve-endings: Part II. The response of a single end-organ. *Journal of Physiology* 61:151-171.
- Adrian, E. D. and Zotterman, Y. (1926b) The impulses produced by sensory nerve endings: Part 3. Impulses set up by Touch and Pressure. *Journal of Physiology* 61:465-483.
- Ajiboye, A. B., Willett, F. R., Young, D. R., et al. (2017) Restoration of reaching and grasping movements through brain-controlled muscle stimulation in a person with tetraplegia: a proof-of-concept demonstration. *Lancet* 389:1821-1830.
- Akbari, H., Khalighinejad, B., Herrero, J. L., et al. (2019) Towards reconstructing intelligible speech from the human auditory cortex. *Scientific Reports* 9:874.
- Al-Khalili, J. (2010) *Pathfinders: The Golden Age of Arab Science* (London: Allen Lane).
- Aldini, J. (1803) *An Account of the Late Improvements in Galvanism, With a Series of Curious and Interesting Experiments Performed Before the Commissioners of the French National Institute and Repeated Lately in the Anatomy Theatres of London* (London: Murray).
- Aldini, J. (1804) *Essai théorique et expérimental sur le galvanisme, avec une série d'expériences faites en présence des commissaires de l'Institut national de France, et en divers amphithéâtres anatomiques de Londres* (Bologna: Piranesi).
- Allen, W., Chen, M. Z., Pichamoorthy, N., et al. (2019) Thirst regulates motivated behavior through modulation of brainwide neural population dynamics. *Science* 364:eaav3932.
- Alter, R. (2007) *The Book of Psalms: A Translation with Commentary* (New York: Norton).
- Anderson, J. A. and Rosenfeld, E. (eds.) (1998) *Talking Nets: An Oral History of Neural Networks* (Cambridge, MA: MIT Press).
- Andral, G. (1840) *Clinique médicale, ou choix d'observations recueillies à l'Hôpital de la Charité. Tome cinquième: Maladies de l'encéphale.* (Paris: Fortin, Masson).
- Andrews, P. W., Bharwani, A., Lee, K. R., et al. (2015) Is serotonin an upper or a downer? The evolution of the serotonergic system and its role in depression and the antidepressant response. *Neuroscience and Biobehavioral Reviews* 51:164-188.

- Anger, S. (2009) Thomas Huxley, ‘On the Hypothesis that Animals are Automata’ (1874). *Victorian Review* 35:50-52.
- Annese, J., Schenker-Ahmed, N. M., Bartsch, H., et al. (2014) Postmortem examination of patient H.M.’s brain based on histological sectioning and digital 3D reconstruction. *Nature Communications* 5:3122.
- Anonymous (1747) *An Enquiry into the Origin of the Human Appetites and Affections, Shewing How Each Arises from Association* (Lincoln: Dodsley).
- Anonymous (1844) *Vestiges of the Natural History of Creation* (London: Churchill).
- Anonymous (1875) Tyndall and his reviewers. *Popular Science Monthly*, February 1875, pp. 501-504.
- Anstie, F. E. (1865) *Stimulants and Narcotics, Their Mutual Relations* (Philadelphia: Lindsay and Blakiston).
- Arbib, M. A. (1972) *The Metaphorical Brain* (London: Wiley).
- Arbib, M. A. (1989) *The Metaphorical Brain 2* (London: Wiley).
- Arbib, M. A. (2000) Warren McCulloch’s search for the logic of the nervous system. *Perspectives in Biology and Medicine* 43:193-216.
- Ashby, R. (1952) *Design for a Brain* (London: Chapman & Hall).
- Aso, Y., Hattori, D., Yu, Y., et al. (2014) The neuronal architecture of the mushroom body provides a logic for associative learning. *Elife* 3:e04577.
- Asok, A., Leroy, F., Rayman J. B. and Kandel, E. R. (2019) Molecular mechanisms of the memory trace. *Trends in Neuroscience* 42:14-22.
- Aspray, W. (1990) *Computing Before Computers* (Ames: Iowa State University Press).
- Auburtin, E. (1863) *Considérations sur les localisations cérébrales et en particulier sur le siège de la faculté du langage articulé* (Paris: Masson et Fils).
- Baernstein, H. D. and Hull, C. L. (1931) A mechanical model of the conditioned reflex. *Journal of General Psychology* 5:99-106.
- Ball, P. (2019) *How to Grow a Human: Adventures in Who We Are and How We Are Made* (London: Collins).
- Ballard, D. (2015) *Brain Computation as Hierarchical Abstraction* (Cambridge, MA: MIT Press).
- Baluška, F. and Reber, A. (2019) Sentience and consciousness in single cells: how the first minds emerged in unicellular species. *BioEssays* 2019:1800229.

- Ban, T. A. (2006) The role of serendipity in drug discovery. *Dialogues in Clinical Neuroscience* 8:335-344.
- Banino, A., Barry, C., Uria, B., et al. (2018) Vector-based navigation using grid-like representations in artificial agents. *Nature* 557:429-433.
- Bao, X., Gjorgieva, E., Shanahan, L. K., et al. (2019) Grid-like neural representations support olfactory navigation of a two-dimensional odor space. *Neuron* 102:1066-1075.
- Baraduc, P., Duhamel, J.-R. and Wirth, S. (2019) Schema cells in the macaque hippocampus. *Science* 363:635-639.
- Barber, P. (2018) *Psychedelic Revolutionaries: Three Medical Pioneers, the Fall of Hallucinogenic Research and the Rise of Big Pharma* (London: Zed).
- Bardin, J. (2012) Making connections: Is a project to map the brain's full communications network worth the money? *Nature* 483:394-396.
- Bargmann, C. I. (2013) Beyond the connectome: How neuromodulators shape neural circuits. *Bioessays* 34:458-465.
- Bargmann, C. I. (2015) How the new neuroscience will advance medicine. *Journal of the American Medical Association* 314:221-222.
- Bargmann, C. I. and Marder, E. (2013) From the connectome to brain function. *Nature Methods* 10:483-490.
- Barlow, H. B. (1953) Summation and inhibition in the frog's retina. *Journal of Physiology* 119:69-88.
- Barlow, H. B. (1961) Possible principles underlying the transformations of sensory messages. In: W. A. Rosenblith (ed.) *Sensory Communication* (Cambridge, Mass: MIT Press), pp. 217-234.
- Barlow, H. B. (1972) Single units and sensation: A neuron doctrine for perceptual psychology? *Perception* 1:371-394.
- Barlow, H. B. (2009) Barlow's 1972 paper. *Perception* 38:795-807.
- Barlow, H. B. and Levick, W. R. (1965) The mechanism of directionally selective units in rabbit's retina. *The Journal of Physiology* 178:477-504.
- Baron-Cohen, S. (2003) *The Essential Difference: Men, Women and the Extreme Male Brain* (London: Allen Lane).

- Barrett, P. H., Gautrey, P. J., Herbert, S., et al. (eds.) (2008) *Charles Darwin's Notebooks, 1836-1844: Geology, Transmutation of Species, Metaphysical Enquiries* (Cambridge: Cambridge University Press).
- Bartholow, R. (1874a) Experimental investigations into the functions of the human brain. *The American Journal of the Medical Sciences* 134:305-313.
- Bartholow, R. (1874b) Experiments on the functions of the human brain. *British Medical Journal* 1(700):727.
- Bartol, T. M., Bromer, C., Kinney, J., et al. (2015) Nanoconnectomic upper bound on the variability of synaptic plasticity. *eLife* 4:e10778.
- Bashivan, P., Kar. K. and DiCarlo, J. J. (2019) Neural population control via deep image synthesis. *Science* 364:eaav9436.
- Bastian, H. (1880) *The Brain as an Organ of Mind* (New York: Appleton).
- Baumann, O., Borra, R. J., Bower, J. M., et al. (2015) Consensus paper: the role of the cerebellum in perceptual processes. *Cerebellum* 14:197-220.
- Baumeister, A. (2000) The Tulane electrical brain stimulation program: a historical case study in medical ethics. *Journal of the History of the Neurosciences* 9:262-278.
- Baumeister, A. (2011) The search for an endogenous schizogen: the strange case of Taraxein. *Journal of the History of the Neurosciences* 20:106-122.
- Beccaria, G. (1776) *A Treatise Upon Artificial Electricity, in Which Are Given Solutions of a Number of Interesting Electric Phenomena, Hitherto Unexplained* (London: Nourse).
- Beck, J. M., Ma, W. J., Kiani, R., et al. (2008) Probabilistic population codes for Bayesian decision making. *Neuron* 60:1142-1152.
- Beckmann, E. C. (2006) CT scanning the early days. *The British Journal of Radiology* 79:5-8.
- Bennett, C. M., Miller, M. B. and Wolford, G. L. (2009) Neural correlates of interspecies perspective taking in the post-mortem Atlantic Salmon: an argument for multiple comparisons correction. *NeuroImage* 47:S39-S40.
- Bentley, R. (1692) *Matter and Motion Cannot Think, or, A Confutation of Atheism from the Faculties of Soul* (London: Parkhurst, Mortlock).
- Berengario da Carpi, J. (1521) *Commentaria cum amplissimis additionibus super Anatomia Mundini una cum textu ejusdem in pristinum & verum nitorem redacto* (Bologna: de Benedictis).
- Bergson, H. (1911) *Matter and Memory* (London: Allen and Unwin).

- Berlucchi, G. (1999) Some aspects of the history of the law of dynamic polarization of the neuron. From William James to Sherrington, from Cajal and Van Gehuchten to Golgi. *Journal of the History of the Neurosciences* 8:191-201.
- Berlucchi, G. (2002) The origin of the term plasticity in the neurosciences: Ernesto Lugaro and chemical synaptic transmission. *Journal of the History of the Neurosciences* 11:305-309.
- Berman, R. M., Cappiello, A., Anand, A., et al. (2000) Antidepressant effects of ketamine in depressed patients. *Biological Psychiatry* 47:351-354.
- Bernstein, J. (1868) Über den zeitlichen Verlauf der negativen Schwankung des Nervenstroms. *Pflüger, Archiv für Physiologie* 1:173-207.
- Bernstein, J. (1902) Untersuchungen zur Thermodynamik der bioelektrischen Ströme. *Pflüger, Archiv für Physiologie* 92:521-562.
- Bertholon, P. (1780) *De l'électricité du corps humain dans l'état de santé et de maladie* (Paris: Didot).
- Bertucci, P. (2007) Therapeutic attractions: Early application of electricity to the art of healing. In: H. Whitaker, C. U. M. Smith and S. Finger (eds.) *Brain, Mind and Medicine: Neuroscience in the 18th Century* (New York: Springer), pp. 271-283.
- Bhattacharya, A., Aghayeva U., Berghoff E. G. and Hobert, O. (2019) Plasticity of the electrical connectome of *C. elegans*. *Cell* 176:1174-1189.
- Bishop, M. P., Elder, S. T. and Heath, R. G. (1963) Intracranial self-stimulation in man. *Science* 140:394-396.
- Bizzo, N. M. V. (1992) Darwin on Man in the 'Origin of Species': Further factors considered. *Journal of the History of Biology* 25:137-147.
- Blackmore, S. (2017) *Consciousness: A Very Short Introduction* (Oxford: Oxford University Press).
- Blakemore, C. and Cooper, G. F. (1970) Development of the brain depends on the visual environment. *Nature* 228:477-478.
- Bliss, T. V. P. and Collingridge, G. L. (1993) A synaptic model of memory: long-term potentiation in the hippocampus. *Nature* 361:31-39.
- Bliss, T. V. P. and Lømo, T. (1973) Long-lasting potentiation of synaptic transmission in the dentate area of the anaesthetized rabbit following stimulation of the perforant path. *Journal of Physiology* 232:331-356.
- Block, N. (1996) How can we find the neural correlate of consciousness? *Trends in Neurosciences* 19:456-459.

- Block, N. (2015) Consciousness, big science, and conceptual clarity. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp. 161-176.
- Bock, O. (2013) Cajal, Golgi, Nansen, Schäfer and the neuron doctrine. *Endeavour* 37:228-234.
- Boden, M. A. (2006) *Mind as Machine: A History of Cognitive Science* (Oxford: Clarendon).
- Boerhaave, H. (1743) *Dr. Boerhaave's Academical Lectures on the Theory of Physic. Volume II Containing the Structure and Action of the Vital or Sanguificative Organs.* (London: Innys).
- Bogen, J. E. (2006) Joseph E. Bogen. *The History of Neuroscience in Autobiography* 5:46-122.
- Bolwig, T. G. and Fink, M. (2009) Electrotherapy for melancholia: The pioneering contributions of Benjamin Franklin and Giovanni Aldini. *Journal of Electro-Convulsive Therapy* 25:15-18.
- Boly, M., Massimini, M., Tsuchiya, N., et al. (2017) Are the neural correlates of consciousness in the front or in the back of the cerebral cortex? Clinical and neuroimaging evidence. *Journal of Neuroscience* 37:9603-9613.
- Bonnet, C. (1755) *Essai de psychologie; ou considerations sur les operations de l'âme, sur l'habitude et sur l'éducation* (London: n.p.).
- Bonnet, C. (1760) *Essai analytique sur les facultés de l'âme* (Copenhagen: Philibert).
- Borck, C. (2012) Toys are us: Models and metaphors in brain research. In: S. Choudhury and J. Slaby (eds.) *Critical Neuroscience: A Handbook of the Social and Cultural Contexts of Neuroscience* (London: Blackwell), pp. 113-133.
- Borck, C. (2017) Soups and sparks revisited. *Nuncius* 32:286-329.
- Border, R., Johnson, E. C., Evans, L. M., et al. (2019) No support for historical candidate gene or candidate gene-by-interaction hypotheses for major depression across multiple large samples. *American Journal of Psychiatry* 176:376-387.
- Boring, E. G. (1950) *A History of Experimental Psychology* (Englewood Cliffs: Prentice-Hall).
- Borthakur, A. and Cleland, T. (2019) A spike time-dependent online learning algorithm derived from biological olfaction. *Frontiers in Neuroscience* 13:656.
- Boshears, R. and Whitaker, H. (2013) Phrenology and physiognomy in Victorian literature. *Progress in Brain Research* 205:87-112.
- Boudon-Millot, V. (2012) *Galien de Pergame* (Paris: Les Belles Lettres).
- Boullerne, A. I. (2016) The history of myelin. *Experimental Neurology* 283B:431-445.
- Bowditch, H. P. (1886) What is nerve-force? *Science* 8:196-198.

- Bower, J. M. (1994) Constructing new models. In: J. M. Bower and D. Beeman (eds.) *The Book of GENESIS: Exploring Realistic Neural Models with the GEneral NEural SImluation System* (New York: Springer-Verlag/TELOS), pp. 195-202.
- Braudy, L. (1970) Fanny Hill and materialism. *Eighteenth-Century Studies* 4:21-40.
- Brennan, J. (2018) Mappings and meanings. *Trends in Neurosciences* 41:770-772.
- Bresadola, M. (2003) At play with nature: Luigi Galvani's experimental approach to muscular physiology. In: F. L. Holmes, J. Renn and H-J. Rheinberger (eds.) *Reworking the Bench: Research Notebooks in the History of Science* (Dordrecht: Kluwer), pp. 67-92.
- Brette, R. (2019) Is coding a relevant metaphor for the brain? *Behavioral and Brain Sciences* <https://doi.org/10.1017/S0140525X19000049>.
- Broca, P. (1861a) Sur le volume et la forme du cerveau suivant les individus et les races. *Bulletin de la Société d'anthropologie de Paris* 2:139-204, 301-321, 441-446.
- Broca P. (1861b) Perte de la parole, ramollissement chronique et destruction partielle du lobe antérieur gauche du cerveau. *Bulletin de la Société d'anthropologie de Paris* 2: 235-238.
- Broca, P. (1861c) Remarques sur le siège de la faculté du langage articulé ; suivies d'une observation d'aphémie (perte de la parole). *Bulletins de la Société anatomique de Paris* 36: 330-357.
- Broca, P. (1861d) Nouvelle observation d'aphémie produite par une lésion de la moitié postérieure des deuxième et troisième circonvolutions frontales. *Bulletins de la Société anatomique de Paris* 36:398-407.
- Broca, P. (1863) Localisation des fonctions cérébrales. Siège de la faculté du langage articulé. *Bulletins de la Société d'anthropologie de Paris* 4:200-202.
- Broca, P. (1865) Sur le siège de la faculté du langage articulé. *Bulletins de la Société d'anthropologie de Paris* 6:377-393.
- Brock, L. G., Coombs, J. S. and Eccles, J. C. (1952) The recording of potentials from motoneurons with an intracellular electrode. *Journal of Physiology* 117:431-460.
- Brodie, B. B. and Shore, P. A. (1957) A concept for a role of serotonin and norepinephrine as chemical mediators in the brain. *Annals of the New York Academy of Sciences* 66:631-642.
- Brodie, B. B., Pletscher, A. and Shore, P. A. (1955) Evidence that serotonin has a role in brain function. *Science* 122:968.
- Brodts, S., Gais, S., Beck, J., et al. (2018) Fast track to the neocortex: A memory engram in the posterior parietal cortex. *Science* 362:1045-1048.



- Brooks, C. McC. and Eccles, J. C. (1947) An electrical hypothesis of central inhibition. *Nature* 159:760-764.
- Brooks, R. A. (2015) The computational metaphor. In: J. Brockman (ed.) *This Idea Must Die: Scientific Theories That Are Blocking Progress* (New York: Harper Perennial), pp. 295-298.
- Brown, A. (2019) *Lithium: A Doctor, a Drug, and a Breakthrough* (New York: Liveright).
- Brown, E. N. and Behrmann, M. (2017) Controversy in statistical analysis of functional magnetic resonance imaging data. *Proceedings of the National Academy of Sciences USA* 114:E3368-E3369.
- Brown, J. W. (2014) The tale of the neuroscientists and the computer: Why mechanistic theory matters. *Frontiers in Neuroscience* 8:349.
- Brown, R. E. and Milner, P. M. (2003) The legacy of Donald O. Hebb: more than the Hebb Synapse. *Nature Reviews Neuroscience* 4:1013-1019.
- Brown, T. M. (1974) From mechanism to vitalism in Eighteenth-Century English physiology. *Journal of the History of Biology* 7:179-216.
- Brown, T. (2003) *Making Truth: Metaphor in Science* (Chicago: University of Illinois Press).
- Browne, P. (1728) *The Procedure, Extent, and Limits of Human Understanding* (London: Innys).
- Bruce, D. (2001) Fifty years since Lashley's In Search of the Engram: refutations and conjectures. *Journal of the History of the Neurosciences* 10:308-318.
- Buchanan, S., Kain, J. S. and de Bivort, B. L. (2015) *Proceedings of the National Academy of Sciences USA* 112:6700-6705.
- Buck, G. H. and Hunka, S. M. (1999) W. Stanley Jevons, Allan Marquand, and the origins of digital computing. *IEEE Annals of the History of Computing* 21:21-27.
- Bullock, T. H., Bennet, M. V. L., Johnston, D., et al. (2005) The neuron doctrine, redux. *Science* 310:791-792.
- Burgen, A. S. V. (1964) Synaptic physiology. *Nature* 204:412.
- Burton, R. (1621) *The Anatomy of Melancholy, What it Is. With All the Kindes, Causes, Symptomes, Prognostickes, and Severall Causes of It* (Oxford: Cripps).
- Butler, A. B. (2009) Triune brain concept: A comparative evolutionary perspective. In: L. R. Squire (ed.) *Encyclopedia of Neuroscience* (New York: Academic Press).
- Butler, W., Hardcastle, K. and Giocomo, L. M. (2019) Remembered reward locations restructure entorhinal spatial maps. *Science* 363:1447-1452.
- Buzsáki, G. (2010) Neural syntax: cell assemblies, synapsembles, and readers. *Neuron* 68:362-385.

- Buzsáki, G. (2019) *The Brain from Inside Out* (New York: Oxford University Press).
- Byrne, W. L., Samuel, D., Bennett, E. L., et al. (1966) Memory transfer. *Science* 153:658-659.
- Cabanis, J. P. G. (1815) *Rapports du physique et du moral de l'homme. Tome Premier* (Paris: Caille et Ravier).
- Cade, J. F. J. (1949) Lithium salts in the treatment of psychotic excitement. *The Medical Journal of Australia* 1949-2:349-351.
- Cahan, D. (2018) *Helmholtz: A Life in Science* (Chicago: Chicago University Press).
- Cahill, L. (2015) Fundamental sex difference in human brain architecture. *Proceedings of the National Academy of Sciences USA* 111:577-578.
- Cajal, S. Ramón y (1894a) La fine structure des centres nerveux. *Proceedings of the Royal Society of London* 55:444-468.
- Cajal, S. Ramón y (1894b) *Les Nouvelles idées sur la structure du système nerveux chez l'homme et chez les vertébrés* (Paris: Reinwald).
- Cajal, S. Ramón y (1909) *Histologie du système nerveux de l'homme et des vertébrés, tome premier* (Paris: Maloine).
- Cajal, S. Ramón y (1937) Recollections of my life. *Memoirs of the American Philosophical Society* 8:1-638.
- Cajal, S. Ramón y (1995) *Histology of the Nervous System Volume I. Translated by Neely Swanson and Larry W Swanson* (Oxford: Oxford University Press).
- Cajal, S. Ramón y (1999) *Texture of the Nervous System of Man and the Vertebrates, Volume I* (Berlin: Springer).
- Calabrese, R. (2018) Inconvenient truth to principle of neuroscience. *Trends in Neurosciences* 41:488-491.
- Calhoun, A., Pillow, J. W. and Murthy, M. (2019) Unsupervised identification of the internal states that shape natural behavior. *Nature Neuroscience* 22:2040-2049.
- Campanot, R. B. (2016) *Animal Electricity: How We Learned that the Body and Brain are Electric Machines* (London: Harvard University Press).
- Cannon, W. B. (1927) The James-Lange theory of emotions: A critical examination and an alternative theory. *American Journal of Psychology* 39:106-124.
- Cannon, W. B. (1931) Against the James-Lange and the thalamic theories of emotions. *Psychological Review* 38:281-295.

- Carandini, M. (2015) From circuits to behaviour: a bridge too far? In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp. 177-185.
- Carandini, M. (2019) Charting the structure of neuroscience. *Neuron* 102:732-734.
- Cariani, P. A. (2009) The homeostat as embodiment of adaptive control. *International Journal of General Systems* 38:139-154.
- Carlat, D. (2015) Response to Lacasse and Leo. *The Behavior Therapist* 38:262-263.
- Carlsson, A. (2001) A paradigm shift in brain research. *Science* 294:1021.
- Caron, S. J., Ruta, V., Abbott, L. F. and Axel, R. (2013) Random convergence of olfactory inputs in the *Drosophila* mushroom body. *Nature* 497:113-117.
- Carrillo-Reid, L., Han, S., Yang, W., et al. (2019) Controlling visually guided behavior by holographic recalling of cortical ensembles. *Cell* 178:447-457.
- Carta, I., Chen, C. H., Schott, A. L., et al. (2019) Cerebellar modulation of the reward circuitry and social behavior. *Science* 363:eaav0581.
- Casarotto, S., Comanducci, A., Rosanova, M., et al. (2016) Stratification of unresponsive patients by an independently validated index of brain complexity. *Annals of Neurology* 80:718-729.
- Catani, M. and Sandrone, S. (2015) *Brain Renaissance from Vesalius to Modern Neuroscience* (Oxford: Oxford University Press).
- Cavanna, A. E. and Nani, A. (2014) *Consciousness: Theories in Neuroscience and Philosophers of Mind* (Berlin: Springer-Verlag).
- Cavendish, M. (1664) *Philosophical Letters, or, Modest Reflections Upon Some Opinions in Natural Philosophy Maintained by Several Famous and Learned Authors of This Age, Expressed By Way of Letters* (London: n.p.).
- Cayco-Gajic, N. A. and Sweeney, Y. (2018) Delving deep into crossmodal integration. *Journal of Neuroscience* 38:6442-6444.
- Cazé, R. D., Humphries, M. and Gutkin, B. (2013) Passive dendrites enable single neurons to compute linearly non-separable functions. *PLoS Computational Biology* 9:e1002867.
- Chadwick, O. (1975) *The Secularisation of the European Mind in the Nineteenth Century* (Cambridge: Cambridge University Press).
- Chalmers, D. J. (1995) Facing up to the problem of consciousness. *Journal of Consciousness Studies* 2:200-219.

- Chang, L. and Tsao, D. Y. (2017) The code for facial identity in the primate brain. *Cell* 169:1013-1028.
- Chen, P. B., Hu, R. K., Wu, Y. E., et al. (2019) Sexually dimorphic control of parenting behavior by the medial amygdala. *Cell* 176:1206-1221.
- Chen, S. (2019) Optical modulation goes deep in the brain. *Science* 365:456-457.
- Chen, Z (1999) Walter Pitts. In: R. A. Wilson and F. C. Keil (eds.) *MIT Encyclopedia of Cognitive Science* (Cambridge, MA: MIT Press), pp. 650-652.
- Chettih, S. and Harvey, C. (2019) Single-neuron perturbations reveal feature-specific competition in V1. *Nature* 567:334-340.
- Chi, K. R. (2016) Abstractions of the mind. *Nature* 531:S16-S17.
- Chiel, H. J. and Beer, R. D. (1997) The brain has a body: adaptive behaviour emerges from interactions of nervous system, body and environment. *Trends in Neurosciences* 20:553-557.
- Churchland, A. and Abbott, L. (2016) Conceptual and technical advances define a key moment for theoretical neuroscience. *Nature Neuroscience* 19:348-349.
- Churchland, P. M. (1995) *The Engine of Reason, the Seat of the Soul: A Philosophical Journey into the Brain* (London: MIT Press)
- Churchland, P. S. (2013) Exploring the causal underpinnings of determination, resolve, and will. *Neuron* 80:1337-1338.
- Churchland, P. S. (2017) Consciousness from the perspective of neurophilosophy. In: K. Almquist and A. Haag (eds.) *The Return of Consciousness: A New Science on Old Questions* (Stockholm: Axel and Margaret Ax:son Johnson Foundation), pp. 47-63.
- Churchland, P. S. and Sejnowski, T. (1992) *The Computational Brain* (Cambridge, MA: MIT Press).
- Clark, A. (2016) *Surfing Uncertainty: Prediction, Action and the Embodied Mind* (Oxford: Oxford University Press).
- Clark, J. W. and Hughes, T. M. (1980) *The Life and Letters of the Reverend Adam Sedgwick, vol II* (Cambridge: Cambridge University Press).
- Clarke, E. and Jacyna, L. S. (1987) *Nineteenth-Century Origins of Neuroscientific Concepts* (London: University of California Press).

- Clarke, G., Grenham, S., Scully P., et al. (2013) The microbiome-gut-brain axis during early life regulates the hippocampal serotonergic system in a sex-dependent manner. *Molecular Psychiatry* 18:666-673.
- Cobb, M. (2002) Exorcizing the animal spirits: Jan Swammerdam on nerve function. *Nature Reviews Neuroscience* 3:395-400.
- Cobb, M. (2006) *The Egg and Sperm Race: The Seventeenth Century Scientists Who Unravelled the Secrets of Sex, Life and Growth* (London: Free Press).
- Cobb, M. (2015) *Life's Greatest Secret: The Race to Crack the Genetic Code* (London: Profile).
- Cobb, S. (1952) On the nature and locus of mind. *Archives of Neurology and Psychiatry* 42:1189-1191.
- Cohen, C. (1998) Charles Lyell and the evidences of the antiquity of man. In: D. J. Blundell and A. C. Scott (eds.) *Lyell: The Past is the Key to the Present (Geological Society of London Special Publications 143:83-93)*.
- Cohen, J. (1966) *Human Robots in Myth and Science* (London: Allen & Unwin).
- Cohen, J. (2018) Neanderthal brain organoids come to life. *Science* 360:1284.
- Cohen, M. X. (2017) Where does EEG come from and what does it mean? *Trends in Neurosciences* 40:208-218.
- Cole, F. J. (1944) *A History of Comparative Anatomy: From Aristotle to the Eighteenth Century* (London: Macmillan).
- Collett, T. S. and Land, M. F. (1978) How hoverflies compute interception courses. *Journal of Comparative Physiology* 125:191-204.
- Colliber, S. (1734) *Free Thoughts Concerning Souls* (London: Robinson).
- Collingwood, R. (1945) *The Idea of Nature* (Oxford: Clarendon).
- Collins, A. F. (2012) An asymmetric relationship: the spirit of Kenneth Craik and the work of Warren McCulloch. *Interdisciplinary Science Reviews* 37:254-268.
- Combe, G. (1836) *Testimonials on Behalf of George Combe, as a Candidate for the Chair of Logic in the University of Edinburgh* (Edinburgh: Anderson).
- Conway, F. and Siegelman, J. (2005) *Dark Hero of the Information Age: In Search of Norbert Wiener the Father of Cybernetics* (New York: Basic).
- Cooke, S. F. and Bliss, T. V. P. (2006) Plasticity in the human central nervous system. *Brain* 129:1659-1673.

- Cooter, R. (1984) *The Cultural Meaning of Popular Science: Phrenology and the Organisation of Consent in Nineteenth-Century Britain* (Cambridge: Cambridge University Press).
- Coppen, A. (1967) The biochemistry of affective disorders. *British Journal of Psychiatry* 113:1237-1264.
- Corballis, M. C. (2014) Left brain, right brain: Facts and fantasies. *PLoS Biology* 12:e1001767.
- Corballis, M. C., Corballis, P. M., Berlucchi, G. and Marzi, C. A. (2018) Perceptual unity in the split brain: the role of subcortical connections. *Brain* 141:e46.
- Corder, G., Ahanonu, B., Grewe, B. F., et al. (2019) An amygdalar neural ensemble that encodes the unpleasantness of pain. *Science* 363:276-281.
- Cordeschi, R. (2002) *The Discovery of the Artificial: Behavior, Mind and Machines Before and Beyond Cybernetics* (London: Kluwer Academic).
- Corkin, S. (2013) *Permanent Present Tense: The Man With No Memory, and What He Taught the World* (London: Allen Lane).
- Costa, E., Karczmar, A. G. and Vesell, E. S. (1989) Bernard B. Brodie and the rise of chemical pharmacology. *Annual Review of Pharmacology and Toxicology* 29:1-21.
- Cowan, J. D. (1967) Algorithms. *Nature* 213:237.
- Cox, R. W., Chen, G., Glen, D. R., et al. (2017) fMRI clustering and false-positive rates. *Proceedings of the National Academy of Sciences USA* 114:E3370-E3371.
- Craik, K. J. (1943) *The Nature of Explanation* (Cambridge: Cambridge University Press).
- Crews, F. (2017) *Freud: The Making of an Illusion* (London: Profile).
- Crick, F. (1958) On protein synthesis. *Symposia of the Society of Experimental Biology* 12:138-163.
- Crick, F. (1979) Thinking about the brain. *Scientific American* 241:219-232.
- Crick, F. (1982) Do dendritic spines twitch? *Trends in Neuroscience* 5:44-46.
- Crick, F. (1984) Function of the thalamic reticular complex: the searchlight hypothesis. *Proceedings of the National Academy of Sciences USA* 81:4586-4590.
- Crick, F. (1989) The recent excitement about neural networks. *Nature* 337:129-132.
- Crick, F. (1994) *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Charles Scribner's Sons).
- Crick, F. and Jones, E. (1993) Backwardness of human neuroanatomy. *Nature* 361:109-110.
- Crick, F. and Koch, C. (1990) Towards a neurobiological theory of consciousness. *Seminars in the Neurosciences* 2:263-175.

- Crick, F. and Koch, C. (1995a) Are we aware of neural activity in primary visual cortex? *Nature* 375:121-123.
- Crick, F. and Koch, C. (1995b) Cortical areas in visual awareness. *Nature* 377:294-295.
- Crick, F. and Koch, C. (1998) Consciousness and neuroscience. *Cerebral Cortex* 8:97-107.
- Crick, F. and Koch, C. (2003) A framework for consciousness. *Nature Neuroscience* 6:119-126.
- Crick, F. and Koch, C. (2005) What is the function of the claustrum? *Philosophical Transactions of the Royal Society B* 360:1271-1279.
- Cunning, D. (2006) Cavendish on the intelligibility of the prospect of thinking matter. *History of Philosophy Quarterly* 23:117-136.
- Dahmani, L., Patel, R. M., et al. (2018) An intrinsic association between olfactory identification and spatial memory in humans. *Nature Communications* 9:4162.
- Daigle, E. N. (2009) Reconciling matter and spirit: the Galenic brain in early modern literature. PhD thesis, University of Iowa, USA. <http://ir.uiowa.edu/etd/286>
- Dale, H. H. (1914) The action of certain esters and ethers of choline, and their relation to muscarine. *Journal of Pharmacology and Experimental Therapeutics* 6:147-190.
- Dalgleish, T. (2004) The emotional brain. *Nature Reviews Neuroscience* 5:582-589.
- Damasio, H., Grabowski, T. J., Tranel, D., et al. (1996) A neural basis for lexical retrieval. *Nature* 380:499-505.
- Danjo, T., Toyozumi, T. and Fujisawa, S. (2018) Spatial representations of self and other in the hippocampus. *Science* 359:213-218.
- Darwin, C. (2004) *The Descent of Man, and Selection in Relation to Sex* (London: Penguin).
- Darwin, E. (1801) *Zoonomia; Or, the Laws of Organic Life, Vol. I* (London: Johnson).
- Daugman, J. (1990) Brain metaphor and brain theory. In: E. Schwartz (ed.) *Computational Neuroscience* (London: MIT Press), pp. 9-18.
- Dax, M. (1865) Lésions de la moitié gauche de l'encéphale coïncident avec l'oubli des signes de la pensée: Lu au Congrès méridional tenu à Montpellier en 1836, par le docteur Marc Dax. *Gazette Hebdomadaire de Médecine et de Chirurgie* 17:259-260.
- Dax, M. G. (1865) Sur le même sujet. *Gazette Hebdomadaire de Médecine et de Chirurgie* 17:260-262.
- de Kovel, C. and Francks, C. (2019) The molecular genetics of hand preference revisited. *Scientific Reports* 9:5986.

- de Saussure, R. (1949) Haller and La Mettrie. *Journal of the History of Medicine and Allied Sciences* 4:431-449.
- Decker, H. S. (2013) *The Making of DSM-III: A Diagnostic Manual's Conquest of American Psychiatry* (New York: Oxford University Press).
- Deco, G., Cruzat, J., Cabral J., et al. (2018) Whole-brain multimodal neuroimaging model using serotonin receptor maps explains non-linear functional effects of LSD. *Current Biology* 28:3065-3074.
- Dehaene, S. (2014) *Consciousness and the Brain: Deciphering how the Brain Codes Our Thoughts* (New York: Penguin).
- Dehaene, S. and Changeux, J.-P. (2011) Experimental and theoretical approaches to conscious processing. *Neuron* 70:200-227.
- Dehaene, S., Lau, H. and Kouider, S. (2017) What is consciousness, and could machines have it? *Science* 358:486-492.
- Delafresnaye, J. F. (ed.) (1954) *Brain Mechanisms and Consciousness* (Oxford: Blackwell Scientific).
- Delcomyn, F. (1980) Neural basis of rhythmic behavior in animals. *Science* 210:492-498.
- Delgado, J. M. R. (1965) Free behavior and brain stimulation. *International Review of Neurobiology* 6:349-449.
- Demertzi, A., Tagliazucchi, E., Dehaene, S., et al. (2019) Human consciousness is supported by dynamic complex patterns of brain signal coordination. *Science Advances* 5:eaat7603.
- Demoor, J. (1896) La plasticité morphologique des neurones cérébraux. *Archives de Biologie* 14:723-52
- Dennett, D. (1991) *Consciousness Explained* (London: Penguin).
- Descartes, R. (1985) *The Philosophical Writings of Descartes, translated by John Cottingham Robert Stoothoof and Dugald Murdoch, Volume 1* (Cambridge, Cambridge University Press).
- di Lullo, E. and Kriegstein, A. (2017) The use of brain organoids to investigate neural development and disease. *Nature Reviews Neuroscience* 18:573-584.
- di Pellegrino, G., Fadiga, L., Fogassi, L., et al. (1992) Understanding motor events: a neurophysiological study. *Experimental Brain Research* 91:176-180.
- Diamond, S., Balvin, R. S. and Diamond, F. R. (1963) *Inhibition and Choice: A Neurobehavioral Approach to Problems of Plasticity in Behavior* (New York: Harper & Row).
- Dick, O. L. (ed.) *Aubrey's Brief Lives* (London: Vintage).



- Dickinson, M. (2014) Motor control: how dragonflies catch their prey. *Current Biology* 25:R232-R234.
- Ditton, H. (1712) *A Discourse Concerning the Resurrection of Jesus Christ* (London: Bell and Lintott).
- Ditton, H. (1714) *The New Law of Fluids* (London: Cowse).
- Dittrich, L. (2016) *Patient H. M. A Story of Memory, Madness, and Family Secrets* (London: Chatto & Windus).
- Dobelle, W. H. (2000) Artificial vision for the blind by connecting a television camera to the visual cortex. *ASAIO Journal* 46:3-9.
- Dobosiewicz, M., Liu, Q. and Bargmann, C. I. (2019) Reliability of an interneuron response depends on an integrated sensory state. *eLife* 8:e50566.
- Dominik, T., Dostál, D., Zielina, M., et al. (2018) Libet's experiment: A complex replication. *Consciousness and Cognition* 65:1-26.
- Donoghue, J. (2015) Neurotechnology. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp. 219-233.
- Doty, R. W. (2007) Alkmaion's discovery that brain creates mind: A revolution in human knowledge comparable to that of Copernicus and of Darwin. *Neuroscience* 147:561-568.
- Drew L. (2019) The ethics of brain-computer interfaces. *Nature* 571:S19-S21.
- Dryander, J. (1536) *Anatomia capitis humani* (Marpurg: Cervicorni).
- Du Laurens, A. (1599) *A discourse of the preservation of the sight: of melancholike diseases; of rheumes, and of old age* (London: Kingston, Iacson).
- Dubois, J., de Berker, A. O. and Tsao, D. Y. (2015) Single-unit recordings in the macaque face patch system reveal limitations of fMRI MVPA. *Journal of Neuroscience* 35:2791-2802.
- Dudai, Y. and Evers, K. (2014) To simulate or not to simulate? What are the questions? *Neuron* 84:254-261.
- Dunn, T. W., Mu, Y., Narayan, S., et al. (2016) Brain-wide mapping of neural activity controlling zebrafish exploratory locomotion. *eLife* 5:e12741.
- Dupont, J.-C. (1999) *Histoire de la neurotransmission* (Paris: Presses Universitaires de France).
- Dupuy, J.-P. (2009) *On the Origins of Cognitive Science: The Mechanization of the Mind* (London: MIT Press).

- Duval, A. (1864) Siège de la faculté du langage articulé, cas d'aphémie. *Bulletins de la Société d'anthropologie de Paris* 5:213-217.
- Easterling, K. (2001) Walter Pitts. *Cabinet* 5 <http://www.cabinetmagazine.org/issues/5/walterpitts.php>
- Eccles, J. (1951) Hypotheses relating to the brain-mind problem. *Nature* 168:53-57.
- Eccles, J. (1953) *The Neurophysiological Basis of Mind: The Principles of Neurophysiology* (Oxford: Oxford University Press).
- Eccles, J. (1976) From electrical to chemical transmission in the central nervous system. *Notes and Records of the Royal Society of London* 30:219-230.
- Eccles, J. and Feindel, F. (1978) Wilder Graves Penfield, 26 January 1891 – 5 April 1976. *Biographical Memoirs of Fellows of the Royal Society* 24:473-513.
- Economo, M. N., Clack, N. G., Lavis, L. D., et al. (2016) A platform for brain-wide imaging and reconstruction of individual neurons. *eLife* 5:e10566.
- Economo, M. N., Viswanathan, S., Tasic, B., et al. (2018) Distinct descending motor cortex pathways and their roles in movement. *Nature* 563:79-84.
- Edelman, G. M. and Tononi, G. (2000) *Consciousness: How Matter Becomes Imagination* (London: Penguin).
- Eichenbaum, H., Morton, T. H., Potter, H. and Corkin, S. (1983) Selective olfactory deficits in case H.M. *Brain* 106:459-472.
- Eichenbaum, H. (2016) Still searching for the engram. *Learning and Behavior* 44:209-222.
- Einevoll, G., Destexhe, A., Diesmann, M., et al. (2019) The scientific case for brain simulations. *Neuron* 102:735-744.
- Eklund, A., Nichols, T. E. and Knutsson, H. (2016) Cluster failure: Why fMRI inferences for spatial extent have inflated false-positive rates. *Proceedings of the National Academy of Sciences USA* 113:7900-7905.
- Eklund, A., Nichols, T. E. and Knutsson, H. (2017) Reply to Brown and Behrmann, Cox, et al. and Kessler et al.: Data and code sharing is the way forward for fMRI. *Proceedings of the National Academy of Sciences USA* 114:E3374-E3375.
- Eliasmith, C., Stewart, T. C., Choo, X., et al. (2012) A large-scale model of the functioning brain. *Science* 338:1202-1205.
- Erö, C., Gewaltig, M.-O., Keller, D. and Markram, H. (2018) A cell atlas for the mouse brain. *Frontiers in Neuroinformatics* 12:00084.

- Fabian, S. T., Sumner, M. E., Wardill, T. J., et al. (2018) Interception by two predatory fly species is explained by a proportional navigation feedback controller. *Journal of the Royal Society Interface* 15:20180466.
- Fahrenfort, J. J., van Leeuwen, J. , Olivers, C. N. L. and Hogendoorn, H. (2017) Perceptual integration without conscious access. *Proceedings of the National Academy of Sciences USA* 114:3744-3749.
- Fan, X. and Markram, H. (2019) Brief history of simulation neuroscience. *Frontiers in Neuroinformatics* 13:32.
- Fara, P. (2002) *An Entertainment for Angels* (London: Icon).
- Farahany, N. A., Greely, H. T., Hyman, S., et al. (2018) The ethics of experimenting with human brain tissue. *Nature* 556:429-432.
- Fearing, F. (1970) *Reflex Action: A Study in the History of Physiological Psychology* (Boston: MIT Press).
- Feinberg, T. and Mallat, J. (2016) *The Ancient Origins of Consciousness: How the Brain Created Experience* (London: MIT Press).
- Felleman, D. J. and Van Essen, D. C. (1991) Distributed hierarchical processing in the primate cerebral cortex. *Cerebral Cortex* 1:1-47.
- Ferrier, D. (1876) *The Functions of the Brain* (London: Smith, Elder).
- Ferrier, D. (1878a) The Goulstonian lectures on the localisation of cerebral disease. *British Medical Journal* 1:443-447.
- Ferrier, D. (1878b) *The Localisation of Cerebral Function* (London: Smith, Elder).
- Fessard, A. E. (1954) Mechanisms of nervous integration and conscious experience. In: J. F. Delafresnaye (ed.) *Brain Mechanisms and Consciousness* (Oxford: Blackwell Scientific), pp. 200-235.
- Feuillet, L., Dufour, H. and Pelletier, J. (2007) Brain of a white-collar worker. *The Lancet* 370:262.
- Fiacco, T. A. and McCarthy, K. D. (2018) Multiple lines of evidence indicate that gliotransmission does not occur under physiological conditions. *Journal of Neuroscience* 38:3-13.
- Fibiger, H. (2012) Psychiatry, the pharmaceutical industry, and the road to better therapeutics. *Schizophrenia Bulletin* 38:649-650.
- Fields, R. (2018) The First Annual Meeting of the Society for Neuroscience, 1971: Reflections approaching the 50th anniversary of the Society's formation. *Journal of Neuroscience* 38:9311-9317.

- Fine, C. (2010) *Delusions of Gender: The Real Science Behind Sex Differences* (London: Norton).
- Finger, S. (1996) Gustave Dax and the early history of cerebral dominance. *Archives of Neurology* 53:806-813.
- Finger, S. (2000) *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press).
- Finger, S. (2013) The overlooked literary path to modern electrophysiology: philosophical dialogues, novels, and travel books. *Progress in Brain Research* 205:3-17.
- Finger, S. and Law, M. B. (1998) Karl August Weinhold and his ‘science’ in the era of Mary Shelley’s *Frankenstein*: Experiments on electricity and the restoration of life. *Journal of the History of Medicine* 53:161-180.
- Finger, S. and Wade, N. J. (2002a) The neuroscience of Helmholtz and the theories of Johannes Müller. Part 1: Nerve cell structure, vitalism, and the nerve impulse. *Journal of the History of the Neurosciences* 11:136-155.
- Finger, S. and Wade, N. J. (2002b) The neuroscience of Helmholtz and the theories of Johannes Müller. Part 2: Sensation and perception. *Journal of the History of the Neurosciences* 11:234-254.
- Finger, S., Piccolino, M. and Stahnisch, F. W. (2013) Alexander von Humboldt: Galvanism, animal electricity, and self-experimentation. Part 2: The electric eel, animal electricity, and later years. *Journal of the History of the Neurosciences* 22:237-352.
- Finkelstein, G. (2013) *Emil du Bois-Reymond: Neuroscience, Self, and Society in Nineteenth-Century Germany* (London: MIT Press).
- Finkelstein, G. (2014) Emil du Bois-Reymond’s reflections on consciousness. In: C. U. M. Smith and H. Whitaker (eds.) *Brain, Mind and Consciousness in the History of Neuroscience* (New York: Springer), pp. 163-184.
- Fitzsimonds, R. M., Song, H.-J. and Poo, M.-M. (1997) Propagation of activity-dependent synaptic depression in simple neural networks. *Nature* 388:439-448.
- Fleck, L. (1979) *Genesis and Development of a Scientific Fact* (London: University of Chicago Press).
- Fletcher, J. (2013) *Freud and the Scene of Trauma* (New York: Fordham University Press).
- Flourens, P. (1824) *Recherches expérimentales sur les propriétés et les fonctions du système nerveux, dans les animaux vertébrés* (Paris: Crevot).

- Flourens, P. (1842) *Recherches expérimentales sur les propriétés et les fonctions du système nerveux, dans les animaux vertébrés* (Paris: Ballière).
- Forbes, A. and Thacher, C. (1920) Amplification of action currents with the electron tube in recording with the string galvanometer. *American Journal of Physiology* 52:409-471.
- Foster, M. and Sherrington, C. S. (1897) *A Text Book of Physiology. Part III: The Central Nervous System* (London: Macmillan).
- Fowler, R. (1793) *Experiments and Observations Relative to the Influence Lately Discovered by M. Galvani, and Commonly Called Animal Electricity* (Edinburgh: Duncan, Hill, Robertson & Berry, add Mudie).
- Fox, K. C. R., Foster, B. L., Kucyi, A., et al. (2018) Intracranial electrophysiology of the human default network. *Trends in Cognitive Sciences* 20:307-324.
- Frampton, M. (2008) *Embodiments of Will: Anatomical and Physiological Theories of Voluntary Animal Motion from Greek Antiquity to the Latin Middle Ages, 400 BC – AD 1300* (Saarbruck: Verlag Dr. Müller).
- France, C. M., Lysaker, P. H. and Robinson, R. P. (2007) The ‘chemical imbalance’ explanation for depression: origins, lay endorsement and clinical implications. *Professional Psychology: Research and Practice* 38:411-420.
- Frank, L. (2018) *The Pleasure Shock: The Rise of Deep Brain Stimulation and Its Forgotten Inventor* (New York: Dutton).
- Frank, R. G. (1990) Thomas Willis and his circle: Brain and mind in seventeenth-century medicine. In: G. S. Rousseau (ed.) *The Language of Psyche: Mind and Body in Enlightenment Thought* (Berkeley: University of California Press), pp. 107-147.
- Frank, R. G. (1994) Instruments, nerve action, and the all-or-none principle. *Osiris* 9:208-235.
- Freeman, W. and Skarda, C. (1990) Representations: who needs them? In: J. McGaugh et al. (eds.) *Third Conference, Brain Organization and Memory: Cells, Systems and Circuits* (New York: Guilford Press), pp. 375-380.
- Frégnac, Y. (2017) Big data and the industrialization of neuroscience: A safe roadmap for understanding the brain? *Science* 358: 470-477.
- Frégnac, Y. and Laurent, G. (2014) Where is the brain in the Human Brain Project? *Nature* 513:27-29.
- French, R. K. (1969) *Robert Whytt, the Soul, and Medicine* (London: Wellcome).

- French, R. (2003) *Medicine before Science: The Business of Medicine from the Middle Ages to the Enlightenment* (Cambridge: Cambridge University Press).
- Freud, S. (1963) The Unconscious. In: P. Rieff (ed.) *General Psychological Theory: Papers on Metapsychology* (New York: Collier), pp. 116-150.
- Frisby, J. P. and Stone, J. V. (2010) *Seeing: The Computational Approach to Biological Vision* (Cambridge, MA: MIT Press).
- Frisby, J. P. and Stone, J. V. (2012) Marr: An appreciation. *Perception* 41:1040-1052.
- Friston, K. (2003) Learning and inference in the brain. *Neural Networks* 116:1325-1352.
- Friston, K. (2009) The free energy principle: a rough guide to the brain? *Trends in Cognitive Sciences* 13:293-301.
- Friston, K. (2011) Functional and effective connectivity: A review. *Brain Connectivity* 1:13-36.
- Frith, C. (2007) *Making Up the Mind: How the Brain Creates Our Mental World* (London: Wiley-Blackwell).
- Frith, C. and Haggard, P. (2018) Volition and the brain – revisiting a classic experimental study. *Trends in Neurosciences* 41:405-407.
- Fritsch, G. T. and Hitzig, E. (1870) Über die elektrische Erregbarkeit des Grosshirns. *Archiv für Anatomie, Physiologie und wissenschaftliche Medizin* 37:300-332.
- Gall, F. J. (1818) *Anatomie et physiologie du système nerveux en général, et du cerveau en particulier, Volume 3* (Paris: Librairie Grècque-latine-allemande).
- Gall, F. J. and Spurzheim, G. (1810) *Anatomie et physiologie du système nerveux en général, et du cerveau en particulier, Volume 1* (Paris: Schoell).
- Gall, F. J. and Spurzheim, G. (1812) *Anatomie et physiologie du système nerveux en général, et du cerveau en particulier, Volume 2* (Paris: Schoell).
- Gallego, J. A., Perich, M. G., Miller, L. E. and Solla, S. A. (2017) Neural manifolds for the control of movement. *Neuron* 94:978-984.
- Gallese, V. (2006) Intentional attunement: a neurophysiological perspective on social cognition and its disruption in autism. *Brain Research* 1079:15-24.
- Galvani, L. (1953) *Commentary on the Effect of Electricity on Muscular Motion (A translation of Luigi Galvani's De viribus electricitatis in motu musculari commentarius by Robert Montraville Green)* (Cambridge, MA: Elizabeth Licht).
- Gangopadhyay, P. and Das, J. (2019) Do primates and deep artificial neural networks perform object categorization in a similar manner? *Journal of Neuroscience* 39:946-948.

- García, A. M., Sedeño, L., Herrera, M. E., et al. (2017) A lesion-proof brain? Multidimensional sensorimotor, cognitive, and socio-affective preservation despite extensive damage in a stroke patient. *Frontiers in Aging Neuroscience* 8:335.
- Garson, J. (2015) The birth of information in the brain: Edgar Adrian and the vacuum tube. *Science in Context* 28:31-52.
- Gazzaniga, M. S. (2014) The split-brain: Rooting consciousness in biology. *Proceedings of the National Academy of Sciences USA* 111:18093-18094.
- Gazzaniga, M. S. (2015) *Tales from Both Sides of the Brain: A Life in Neuroscience* (New York: Harper Collins).
- Gazzaniga, M. S. (2018) *The Consciousness Instinct: Unraveling the Mystery of how the Brain Makes the Mind* (New York: Farrar, Straus and Giroux).
- Gazzaniga, M. S. and Sperry, R. W. (1967) Language after section of the cerebral commissures. *Brain* 90:131-148.
- Gazzaniga, M. S., Holtzman, J. D. and Smylie, C. S. (1987) Speech without conscious awareness. *Neurology* 37:682-682.
- Gazzaniga, M. S., Bogen, J. E. and Sperry, R. W. (1962) Some functional effects of sectioning the cerebral commissures in man. *Proceedings of the National Academy of Sciences USA* 48:1765-1769.
- Gazzaniga, M. S., Bogen, J. E. and Sperry, R. W. (1963) Laterality effects in somesthesia following cerebral commissurotomy in man. *Neuropsychologia* 1:209-215.
- Gazzaniga, M. S., Bogen, J. E. and Sperry, R. W. (1965) Observations on visual perception after disconnection of the cerebral hemispheres in man. *Brain* 88:221-236.
- Geftter, A. (2015) The man who tried to redeem the world with logic. *Nautilus* 21 <https://nautil.us/issue/21/information/the-man-who-tried-to-redeem-the-world-with-logic>
- Gelbard-Sagiv, H., Mudrik, L., Hill, M. R., et al. (2018) Human single neuron activity precedes emergence of conscious perception. *Nature Communications* 9:2057.
- Genon, S., Reid, A., Langner, R., et al. (2018) How to characterize the function of a brain region. *Trends in Cognitive Sciences* 22:350-363.
- Gerstner, W., Sprekeler, H. and Deco, G. (2012) Theory and simulation in neuroscience. *Science* 338:60-65.

- Giandomenico, S. L., Mierau, S. B., Gibbons, G. M., et al. (2019) Cerebral organoids at the air-liquid interface generate diverse nerve tracts with functional output. *Nature Neuroscience* 22:669-679.
- Gigerenzer, G. and Goldstein, D. G. (1996) Mind as computer: birth of a metaphor. *Creativity Research Journal* 9:131-144.
- Giglioni, G. (2008) What ever happened to Francis Glisson? Albrecht Haller and the fate of eighteenth-century irritability. *Science in Context* 21:1-29.
- Gilbert, F., Cook, M., O'Brien, T. and Illes, J. (2019) Embodiment and estrangement: Results from a first-in-human 'Intelligent BCI' trial. *Science and Engineering Ethics* 25:83-96.
- Gill, C., Whitmarsh, T., Wilkins, J. (2009) Introduction. In: C. Gill, T. Whitmarsh, J. Wilkins (eds.) *Galen and the World of Knowledge* (Cambridge: Cambridge University Press), pp. 1-18.
- Glassman, R. B. and Buckingham, H. W. (2007) David Hartley's neural vibrations and psychological associations. In: H. Whitaker, C. U. M. Smith and S. Finger (eds.) *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience* (Boston, MA: Springer), pp. 177-190.
- Gleason, M. W. (2009) Shock and awe: The performance dimension of Galen's anatomical demonstrations. In: C. Gill, T. Whitmarsh, J. Wilkins (eds.) *Galen and the World of Knowledge* (Cambridge: Cambridge University Press), pp. 85-114.
- Glennister, A. (2007) Marr's vision: Twenty-five years on. *Current Biology* 17:R397-R399.
- Glickstein, M. (2014) *Neuroscience: A Historical Introduction* (Cambridge, MA: MIT Press).
- Golgi, C. (1883) Studies on the minute anatomy of the central organs of the nervous system. *The Alienist and Neurologist* 4:236-269, 383-416.
- Golgi, C. (1967) Prize Lecture 1907. In: Nobel Foundation (ed.) *Nobel Lectures. Physiology or Medicine, 1901–1921* (Amsterdam: Elsevier).
- Gonzalez, W. G., Zhang, H., Harutyunyan, A. and Lois, C. (2019) Persistence of neuronal representations through time and damage in the hippocampus. *Science* 365:821-825.
- Goodale, M. A. and Milner, A. D. (1992) Separate visual pathways for perception and action. *Trends in Neuroscience* 15:20-25.
- Gotch, F. (1902) The submaximal electrical response of nerve to a single stimulus. *Journal of Physiology* 28:395-416.
- Gotch, F. and Burch, G. J. (1899) The electrical response of nerve to two stimuli. *Journal of Physiology* 24:410-426.



- Gøtsche, P. C. (2014) Why I think antidepressants cause more harm than good. *The Lancet Psychiatry* 1:104-106.
- Gould, S. J. (1981) *The Mismeasure of Man* (New York: Norton).
- Grabenhorst, F., Báez-Mendoza, R., Genest, W., et al. (2019) Primate amygdala neurons simulate decision processes of social partners. *Cell* 177:986-988.
- Grainger, J., Rey, A. and Dufau, S. (2008) Letter perception: from pixels to pandemonium. *Trends in Cognitive Sciences* 12:381-387.
- Gregory, R. L. (1959) Models and the localization of function in the central nervous system. *Symposium on the Mechanisation of Thought Processes* (London: HMSO), pp. 669-682.
- Gregory, R. L. (1961) The brain as an engineering problem. In: W. H. Thorpe and O. L. Zangwill (eds.) *Current Problems in Animal Behaviour* (Cambridge: Cambridge University Press), pp. 307-330.
- Gregory, R. L. (1980) Perceptions as hypotheses. *Philosophical Transactions of the Royal Society of London B* 290:192-197.
- Gregory, R. L. (1981) *Mind in Science: A History of Explanations in Psychology and Physics* (London: Weidenfeld and Nicolson).
- Gregory, R. L. (1983) Editorial. Forty years on: Kenneth Craik's The Nature of Explanation (1943). *Perception* 12:233-238.
- Green, C. D. (2003) Where did the ventricular localization of mental faculties come from? *Journal of the History of the Behavioral Sciences* 39:131-142.
- Greene, M. R. and Hansen, B. C. (2018) Shared spatiotemporal category representations in biological and artificial deep neural networks. *PLoS Computational Biology* 14:e1006327.
- Greenwood, V. (2015) Consciousness began when the gods stopped speaking. *Nautilus* 24 <http://nautil.us/issue/24/error/consciousness-began-when-the-gods-stopped-speaking>
- Grillet, M., Campagner, D., Petersen, R., et al. (2016) The peripheral olfactory code in *Drosophila* larvae contains temporal information and is robust over multiple timescales. *Proceedings of the Royal Society B* 283:20160665.
- Groothuis, J., Pfeiffer, K., el Jundi, B. and Smid, H. M. (2019) The Jewel Wasp Standard Brain: Average shape atlas and morphology of the female *Nasonia vitripennis* brain. *Arthropod Structure & Development* 51:41-51.
- Gross, C. G. (1995) Aristotle on the brain. *The Neuroscientist* 1:245-250.

- Gross, C. G. (1998) *Brain, Vision, Memory: Tales in the History of Neuroscience* (London: MIT Press).
- Gross, C. G. (2002a) Trepanation from the Paleolithic to the Internet. In: R. Arnott, R. Breitweiser, B. Lichterman, et al. (eds.) *Trepanation: History, Discovery, Theory* (Lisse: Swets and Zeitlinger), pp. 307-322.
- Gross, C. G. (2002b) Genealogy of the ‘grandmother cell’. *The Neuroscientist* 8:512-518.
- Gross, C. G. (2009) *A Hole in the Head: More Tales in the History of Neuroscience* (London: MIT Press).
- Gross, C. G., Bender, D. B. and Rocha-Miranda, C. E. (1969) Visual receptive fields of neurons in inferotemporal cortex of the monkey. *Science* 166:1303-1306.
- Gross, C. G., Rocha-Miranda, C. E. and Bender, D. B. (1972) Visual properties of neurons in inferotemporal cortex of the macaque. *Journal of Neurophysiology* 35:96-111.
- Guest, O. and Love, B. C. (2017) What the success of brain imaging implies about the neural code. *eLife* 6:e21397.
- Guillery, R. (1987) Heard above the hubbub. *Nature* 330:29.
- Gutfreund, Y. (2017) The neuroethological paradox of animal consciousness. *Trends in Neurosciences* 40:196-199.
- Hafting, T., Fyhn, M., Molden, S., et al. (2005) Microstructure of a spatial map in the entorhinal cortex. *Nature* 436:801-806.
- Hagmann, P. (2005) From diffusion MRI to brain connectomics. PhD thesis, EPFL, Lausanne. <http://doi.org/10.5075/epfl-thesis-3230>
- Hagner, M. (2012) The electrical excitability of the brain: toward the emergence of an experiment. *Journal of the History of the Neurosciences* 21:237-249.
- Haley, J. A., Hampton, D. and Marder, E. (2018) Two central pattern generators from the crab, *Cancer borealis*, respond robustly and differentially to extreme extracellular pH. *eLife* 7:e41877.
- Haller, A. von (1762) *Mémoires sur les parties sensibles et irritables du corps animal, tome troisième* (Lausanne: Grasset).
- Hamou, P. (2007) Locke on ‘thinking matter’. A reassessment. In: P. R. Anstey (ed.) *John Locke: Critical Assessments of Leading Philosophers. Series II, vol. 3* (London: Routledge).
- Han, J. H., Kushner, S. A., Yiu, A. P., et al. (2009) Selective erasure of a fear memory. *Science* 323:1492-1496.

- Hanchate, N. K., Lee, E. J., Ellis, A., et al. (2019) Connect-seq to superimpose molecular on anatomical neural circuit maps. <https://www.biorxiv.org/content/10.1101/454835v1>
- Handler, A., Graham, T. G. W., Cohn, R., et al. (2019) Distinct dopamine receptor pathways underlie the temporal sensitivity of associative learning. *Cell* 178:60-75.
- Harrington, A. (1985) Nineteenth-century ideas on hemisphere differences and ‘duality of mind’. *Behavioral and Brain Sciences* 8:617-660.
- Harrington, A. (1987) *Medicine, Mind, and the Double Brain* (Princeton: Princeton University Press).
- Harrington, A. (1990) At the intersection of knowledge and values: Fragments of a dialogue in Woods Hole, Massachusetts, August 1990. In: Harrington, A. (ed.) *So Human a Brain: Knowledge and Values in the Neurosciences* (New York: Springer), pp. 247-325.
- Harrington, A. (2019), *Mind Fixers: Psychiatry’s Troubled Search for the Biology of Mental Illness* (London: Norton).
- Harris L. J. and Almerigi, J. B. (2009) Probing the human brain with stimulating electrodes: The story of Roberts Bartholow’s (1874) experiment on Mary Rafferty. *Brain and Cognition* 70:92-115.
- Hartley, D. (1749) *Observations on Man, His Frame, His Duty, and His Expectations* (London: Hitch and Austen).
- Harvey, C. D., Coen, P. and Tank, D. W. (2012) Choice-specific sequences in parietal cortex during a virtual-navigation decision task. *Nature* 484:62-68.
- Hassabis, D., Kumaran, D., Summerfield, C. and Botvinick, M. (2017) Neuroscience-inspired artificial intelligence. *Neuron* 95:245-258.
- Hassenstein, B. and Reichardt, W. (1956) Systemtheoretische analyse der zeit-, reihenfolgen- und vorzeichenauswertung bei der bewegungsperzeption des rüsselkäfers Chlorophanus. *Zeitschrift Für Naturforschung B* 11:513-524.
- Haxby, J. V., Gobbini, M., Furey, M. L., et al. (2001) Distributed and overlapping representations of faces and objects in ventral temporal cortex. *Science* 293:2425-2430.
- Hayashi-Takagi, A., Yagishita, S., Nakamura, M., et al. (2015) Labelling and optical erasure of synaptic memory traces in the motor cortex. *Nature* 525:333-338.
- Healy, D. (2004) *The Creation of Psychopharmacology* (Cambridge, MA: Harvard University Press).

- Hebb, D. (1949) *The Organization of Behavior: A Neuropsychological Theory* (London: Chapman & Hall).
- Hegel, G. W. F. (2003) *The Phenomenology of Mind* (Mineola: Dover).
- Heidelberger, M. (1993) Force, law, and experiment: The evolution of Helmholtz's philosophy of science. In: D. Cahan (ed.) *Hermann von Helmholtz and the Foundations of Nineteenth-Century Science* (San Francisco: University of California Press), pp. 461-497.
- Heidenhain, R. (1899) *Hypnotism or Animal Magnetism: Physiological Observations* (London: Kegan Paul, Trench, Trübner).
- Heims, S. J. (1980) *John von Neumann & Norbert Wiener: From Mathematics to the Technologies of Life and Death* (London: MIT Press).
- Heims, S. J. (1991) *Constructing a Social Science for Postwar America: The Cybernetics Group, 1946-1953* (London: MIT Press).
- Helmholtz, H. L. F. (1875) *On the Sensations of Tone as a Physiological Basis for the Theory of Music* (London: Longmans, Green).
- Helmholtz, H. von (1962) *Helmholtz's Treatise on Physiological Optics, Volume III* (New York: Dover).
- Herrick, C. J. (1929) *The Thinking Machine* (Chicago: Chicago University Press).
- Hess, W. R. (1958) *The Functional Organization of the Diencephalon* (New York: Grune & Stratton).
- Hesse, R., Hurtado, M. L., Jackson, R. J., et al. (2019) Comparative profiling of the synaptic proteome from Alzheimer's disease patients with focus on the APOE genotype. <https://www.biorxiv.org/content/10.1101/631556v1>
- Hickok, G. (2014) *The Myth of Mirror Neurons: The Real Neuroscience of Communication and Cognition* (London: Norton).
- Higgins, J. W., Mahl, G. F., Delgado, J. M. R. and Hamlin, H. (1956) Behavioral changes during intracranial electrical stimulation. *Archives of Neurology and Psychiatry* 76:399-419.
- Hill, A. V. (1927) *Living Machinery* (London: Bell).
- Hill, S. (2015) Whole brain simulation. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp.111-124.
- Hirshbein, L. (2012) Historical essay: Electroconvulsive therapy, memory, and self in America. *Journal of the History of the Neurosciences* 21:147-169.

- Hoare, D. J., McCrohan, C. R. and Cobb, M. (2008) Precise and fuzzy coding by olfactory sensory neurons. *Journal of Neuroscience* 28:9710-9722.
- Hobbes, T. (1651) *Leviathan, or, The Matter, Forme, and Power of a Common Wealth, Ecclesiasticall and Civil* (London: Crooke).
- Hochberg, L. R., Bacher, D., Jarosiewicz, B., et al. (2012) Reach and grasp by people with tetraplegia using a neurally controlled robotic arm. *Nature* 485:372-375.
- Hochreiter, S. and Schmidhuber, J. (1997) Long short-term memory. *Neural Computation* 9:1735-1780.
- Hodges, A. (2012) *Alan Turing: The Enigma* (London: Vintage).
- Hodgkin, A. (1979) Edgar Douglas Adrian, Baron Adrian of Cambridge, 30 November 1889 – 4 August 1977. *Biographical Memoirs of Fellows of the Royal Society* 25:1-73.
- Hodgkin, A. and Huxley, A. (1952) Propagation of electrical signals along giant nerve fibres. *Proceedings of the Royal Society of London B* 140:177-183.
- Hoffer, A., Osmond, H. and Smythies, J. (1954) Schizophrenia: A new approach. II. Result of a year's research. *Journal of Mental Science* 100:29-45.
- Hofmann, A. (1979) How LSD originated. *Journal of Psychedelic Drugs* 11:53-60.
- Holden, B. (1979) Paul MacLean and the triune brain. *Science* 204:1066-1068.
- Holmes, R. (2008) *The Age of Wonder: How the Romantic Generation Discovered the Beauty and Terror of Science* (London: Harper).
- Home, R. W. (1970) Electricity and the nervous fluid. *Journal of the History of Biology* 3:235-251.
- Horgan, J. (2005) The forgotten era of brain chips. *Scientific American*, October 2005.
- Horton, D. (ed.) (1994) *The Encyclopedia of Aboriginal Australia: Aboriginal and Torres Strait Islander History, Society and Culture* (Canberra: Aboriginal studies Press).
- Howard, D. M., Adams, M. J., Clarke, T. K., et al. (2019) Genome-wide meta-analysis of depression identifies 102 independent variants and highlights the importance of the prefrontal brain regions. *Nature Neuroscience* 22:343-352.
- Hubel, D. H. and Wiesel, T. N. (1959) Receptive fields of single neurones in the cat's striate cortex. *Journal of Physiology* 148:574-591.
- Hubel, D. H. and Wiesel, T. N. (2005) *Brain and Visual Perception: The Story of a 25-Year Collaboration* (Oxford: Oxford University Press).
- Hubel, D. H. and Wiesel, T. N. (2012) Q & A: David Hubel and Torsten Wiesel. *Neuron* 75:182-184.

- Hughes, J. and Söderqvist, T. (1999) Why is it so difficult to write the history of contemporary science? *Endeavour* 23:1-2.
- Hughes, J., Smith, T. W., Kosterlitz, H. W., et al. (1975) Identification of two related pentapeptides from the brain with potent opiate agonist activity. *Nature* 258:577-580.
- Hughlings Jackson, J. (1887) Remarks on evolution and dissolution of the nervous system. *Journal of Mental Science* 33:25-48.
- Hull, C. L. (1937) Mind, mechanism, and adaptive behavior. *Psychological Review* 44:1-32.
- Hull, C. L. and Baernstein, H. D. (1929) A mechanical parallel to the conditioned reflex. *Science* 70:14-15.
- Hultkrantz, A. (1953) *Conceptions of the Soul Among North American Indians: A Study in Religious Ethnology* (Stockholm: Ethnographical Museum of Sweden).
- Husbands, P. and Holland, O. (2008) The Ratio Club: A hub of British cybernetics. In: P. Husbands, O. Holland and M. Wheeler (eds.) *The Mechanical Mind in History* (London: MIT Press), pp. 91-148.
- Husbands, P. and Holland, O. (2012) Warren McCulloch and the British cyberneticians. *Interdisciplinary Science Reviews* 37:237-253.
- Husbands, P., Smith, T., Jakobi, N. and O'Shea, M. (1998) Better living through chemistry: evolving GasNets for robot control. *Connection Science* 10:185-210.
- Huth, A. G., de Heer, W. A., Griffiths, T. L., et al. (2016) Natural speech reveals the semantic maps that tile human cerebral cortex. *Nature* 532:453-458.
- Hutson, M. (2018) AI researchers allege that machine learning is alchemy. <http://www.sciencemag.org/news/2018/05/ai-researchers-allege-machine-learning-alchemy>
- Huxley, T. H. (1874) On the hypothesis that animals are automata, and its history. *Nature* 6:362-366.
- Huxley, T. H. (1898) *Collected Essays: I. Method and Results* (London: Macmillan).
- Igarashi, K. M., Lu, L., Colgin, L. L., et al. (2014) Coordination of entorhinal-hippocampal ensemble activity during associative learning. *Nature* 510:143-147.
- Ingalhalikar, M., Smith, A., Parker, D., et al. (2014a) Sex differences in the structural connectome of the human brain. *Proceedings of the National Academy of Sciences USA* 111:823-828.
- Irwin, L. (2007) *Scotophobin: Darkness at the Dawn of the Search for Memory Molecules* (Plymouth: Hamilton).

- Jackson, J., Karnani, M. M., Zemelman, B. V., et al. (2018) Inhibitory control of prefrontal cortex by the claustrum. *Neuron* 99:1029-1039.
- Jacobs, J., Lega, B. and Anderson, C. (2012) Explaining how brain stimulation can evoke memories. *Journal of Cognitive Neuroscience* 24:553-563.
- James, W. (1890) *Principles of Psychology, Volume 2* (New York: Holt).
- Jameson, K. G. and Hsiao, E. Y. (2018) Linking the gut microbiota to a brain neurotransmitter. *Trends in Neurosciences* 41:413-414.
- Jansen, R. F., Pieneman, A. W. and ter Maat, A. (1996) Spontaneous switching between ortho- and antidromic spiking as the normal mode of firing in the cerebral giant neurons of freely behaving *Lymnaea stagnalis*. *Journal of Neurophysiology* 76:4206-4209.
- Jasanoff, A. (2018) *The Biological Mind: How Brain, Body, and Environment Collaborate to Make Us Who We Are* (New York: Basic)
- Jaynes, J. (1979) *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (Harmondsworth: Penguin).
- Joel, D. and Tarrasch, R. (2014) On the mis-presentation and misinterpretation of gender-related data: The case of Ingalhalikar's human connectome study. *Proceedings of the National Academy of Sciences USA* 111:E637.
- Johansson, S. R. (1993) The brain's software: the natural languages and poetic information processing. In: H. Haken, A. Karlqvist and U. Svedin (eds.) *The Machine as Metaphor and Tool* (Berlin: Springer-Verlag), pp. 9-44.
- Jonas, E. and Kording, K. P. (2017) Could a neuroscientist understand a microprocessor? *PLoS Computational Biology* 13:e1005268.
- Jonas, J., Brissarta, H. and Hossu, G. (2018) A face identity hallucination (palinopsia) generated by intracerebral stimulation of the face-selective right lateral fusiform cortex. *Cortex* 99:296-310.
- Jones, E. G. (1994) Santiago Ramón y Cajal and the Croonian Lecture, March 1894. *Trends in Neurosciences* 17:190-192.
- Jones, E. G. (1999) Golgi, Cajal and the neuron doctrine. *Journal of the History of the Neurosciences* 8:170-178.
- Jones, E. G. and Mendell, L. M. (1999) Assessing the Decade of the Brain. *Science* 284:739.
- Joynt, R. J. (1961) Centenary of patient 'Tan': his contribution to the problem of aphasia. *Archives of Internal Medicine* 108:953-956.
- Jung, C. (1983) *Memories, Dreams, Reflections* (London: Flamingo).

- Jung, R. (1954) Correlation of bioelectrical and automatic phenomena with alterations of consciousness and arousal in man. In: J. F. Delafresnaye (ed.) *Brain Mechanisms and Consciousness* (Oxford: Blackwell Scientific), pp. 310-344.
- Kadipasaoglu C. M., Conner, C. R., Baboyan, V. G., et al. (2017) Network dynamics of human face perception. *PLoS One* 12:e0188834.
- Kandel, E. R. (2006) *In Search of Memory: The Emergence of a New Science of Mind* (New York: Norton).
- Kandel, E. R., Markram, H., Matthews, P. M., et al. (2013) Neuroscience thinks big (and collaboratively). *Nature Neuroscience* 14:659-664.
- Kanwisher, N. (2010) Functional specificity in the human brain: A window into the functional architecture of the mind. *Proceedings of the National Academy of Sciences USA* 107:11163-11170.
- Kanwisher, N. (2017) The quest for the FFA and where it led. *Journal of Neuroscience* 37:1056-1061.
- Kaplan, P. W. (2002) The real Dr Frankenstein: Gottlieb Kratzenstein? *Journal of the Royal Society of Medicine* 95:577-578.
- Kaplan, R., Adhikari, M. H., Hindriks, R., et al. (2016) Hippocampal sharp-wave ripples influence selective activation of the default mode network. *Current Biology* 26:686-691.
- Kardel, T. and Maquet, P. (eds.) (2013) *Nicolaus Steno: Biography and Original Papers of a 17th Century Scientist* (London: Springer).
- Kashyap, S., Ivanov, D., Havlicek, M., et al. (2018) Resolving laminar activation in human V1 using ultra-high spatial resolution fMRI at 7T. *Scientific Reports* 8:17063.
- Kato, S., Kaplan, H. S., Schrödel, T., et al. (2015) Global brain dynamics embed the motor command sequence of *Caenorhabditis elegans*. *Cell* 163:656-669.
- Kay, L. E. (2001) From logical neurons to poetic embodiments of mind: Warren S. McCulloch's project in neuroscience. *Science in Context* 14:591-614.
- Keesy, I. W., Grabe, V., Gruber, L., et al. (2019) Inverse resource allocation between vision and olfaction across the genus *Drosophila*. *Nature Communications* 10:1162.
- Keiper, A. (2006) The age of neuroelectronics. *The New Atlantis* Winter 2006:4-41.
- Keith, A. (1919) *The Engines of the Human Body* (London: Williams and Norgate).
- Keller, E. F. (1995) *Refiguring Life: Metaphors of Twentieth Century Biology* (New York: Columbia University Press).



- Kendrick, K. M and Baldwin, B. A. (1987) Cells in temporal cortex of conscious sheep can respond preferentially to the sight of faces. *Science* 236:448-450.
- Kessler, D., Angstadt, M. and Sripada, C. S. (2017) Reevaluating ‘cluster failure’ in fMRI using nonparametric control of the false discovery rate. *Proceedings of the National Academy of Sciences, USA* 114:E3372-E3373.
- Kety, S. S. (1959) Biochemical theories of schizophrenia. *Science* 129:1528-1532, 1590-1596.
- Khuong, T., Wang, Q. P., Manion, J., et al. (2019) Nerve injury drives a heightened state of vigilance and neuropathic sensitization in *Drosophila*. *Science Advances* 5:eaaw4099.
- Kirk, S. A. and Kitchins, H. (1992) *The Selling of DSM: The Rhetoric of Science in Psychiatry* (New York: Aldine De Gruyter).
- Kirkland, K. L. (2002) High-tech brains: A history of technology-based analogies and models of nerve and brain function. *Perspectives in Biology and Medicine* 45:212-223.
- Kliemann, D., Adolphs, R., Tyszka, J. M., et al. (2019) Intrinsic functional connectivity of the brain in adults with a single cerebral hemisphere. *Cell Reports* 29:2398-2407.
- Knickmeyer, R. C., Wang, J., Zhu, H., et al. (2014) Impact of sex and gonadal steroids on neonatal brain structure. *Cerebral Cortex* 24:2721-2731.
- Knierim, J. J. (2015) The hippocampus. *Current Biology* 25:R1116-R1121.
- Knill, D. C. and Pouget, A. (2004) The Bayesian brain: the role of uncertainty in neural coding and computation. *Trends in Neurosciences* 27:712-719.
- Koch, C. (1999) *Biophysics of Computation: Information Processing in Single Neurons* (New York: Oxford University Press).
- Koch, C. (2012) *Consciousness: Confessions of a Romantic Reductionist* (London: MIT Press).
- Koch, C., Massimini, M., Boly, M. and Tononi, G. (2016) Neural correlates of consciousness: progress and problems. *Nature Reviews Neuroscience* 17:307-321.
- Koehler, P. J. (2007) Neuroscience in the work of Boerhaave and Haller. In: H. Whitaker, C.U.M. Smith and S. Finger (eds.) *Brain, Mind and Medicine: Neuroscience in the 18th Century* (New York: Springer), pp. 213-231.
- Koehler, P. J., Finger S. and Piccolini, M. (2009) The ‘eels’ of South America: Mid-18th-century Dutch contributions to the theory of animal electricity. *Journal of the History of Biology* 42:715-763.
- Koepp, M. J., Gunn, R. N., Lawrence, A. D., et al. (1998) Evidence for striatal dopamine release during a video game. *Nature* 393:266-268.

- Koestler, A. (1967) *The Ghost in the Machine* (London: Hutchinson).
- Konorski J. (1967) *Integrative Action of the Brain: A Multidisciplinary Approach* (Chicago: University of Chicago Press).
- Krause, T., Spindler, L., Poeck, B. and Strauss, R. (2019) Drosophila acquires a long-lasting body-size memory from visual feedback. *Current Biology* 29:1833-1841.
- Kriegeskorte, N. and Diedrichsen, J. (2019) Peeling the onion of brain representations. *Annual Review of Neuroscience* 42:407-432.
- Krueger, R. G. and Hull, C. L. (1931) An electro-chemical parallel to the conditioned reflex. *Journal of General Psychology* 5:262-269.
- Kubie, L. S. (1930) A theoretical application to some neurological problems of the properties of excitation waves which move in closed circuits. *Brain* 53:166-177.
- Kunst, M., Laurell, E., Mokayes, N., et al. (2019) A cellular-resolution atlas of the larval zebrafish brain. *Neuron* 103:21-38.
- Kwakkel, E. and Newton, S. (2019) *Medicine at Monte Cassino: Constantine the African and the Oldest Manuscript of his Pantegni* (Turnhout: Brepols).
- La Mettrie, J. O. de (1748) *L'Homme machine* (Leiden: Luzac).
- La Mettrie, J. O. de (1994) *Man a Machine; and, Man a plant, translated by Richard A. Watson and Maya Rybalka* (Indianapolis: Hackett).
- Lacasse, J. R. and Leo, J. (2005) Serotonin and depression: A disconnect between the advertisements and the scientific literature. *PLoS Medicine* 2:e392.
- Lacasse, J. R. and Leo, J. (2015) Response to Daniel Carlat (2015) and Ronald Pies (2015). *The Behavior Therapist* 38:263-266.
- Landi, S. M. and Freiwald, W. A. (2017) Two areas for familiar face recognition in the primate brain. *Science* 357:591-595.
- Lang, P. (2013) *Medicine and Society in Ptolemaic Egypt* (Leiden: Brill).
- Lange, F. A. (1877) *History of Materialism and Criticism of Its Present Importance, Volume 3* (London: Trübner).
- LaPointe, L. L. (2013) *Paul Broca and the Origins of Language in the Brain* (San Diego: Plural Publishing).
- Lashley, K. S. (1950) In search of the engram. *Symposia of the Society for Experimental Biology* 4:454-482.
- Laslett, P. (ed.) (1950) *The Physical Basis of Mind* (Oxford: Blackwell).

- Laurent, G. (2016) Connectomics: a need for comparative studies. *e-Neuroforum* 7:54-55.
- Le, Q. V., Ranzto, M.'A., Monga, R., et al. (2016) Building high-level features using large scale unsupervised learning. <https://ai.google/research/pubs/pub38115>
- Lecun, Y., Bengio, Y. and Hinton, G. (2015) Deep learning. *Nature* 521:436-444.
- Leiknes, K. A., Jarosh-von Schweder, L. and Høie, B. (2012) Contemporary use and practice of electroconvulsive therapy worldwide. *Brain and Behavior* 2:283-345.
- Leng, G. (2018) *The Heart of the Brain: The Hypothalamus and its Hormones* (London: MIT Press).
- Lenoir, T. (1994) Helmholtz and the materialities of communication. *Osiris* 9:184-207.
- Leo, J. and Lacasse, J. R. (2008) The media and the chemical imbalance theory of depression. *Society* 45:35-45.
- Leshner, A. (1997) Addiction is a brain disease. *Science* 278:45-47.
- Lettvin, J. Y., Maturana, H. R., McCulloch, W. S. and Pitts, W. H. (1959) What the frog's eye tells the frog's brain. *Proceedings of the Institute of Radio Engineers* 47:1940-1951.
- Lewis, J. (1981) *Something Hidden: A Biography of Wilder Penfield* (Toronto: Doubleday).
- Lewis, J. E., DeGusta, D., Meyer, M. R., et al. (2011) The mismeasure of science: Stephen Jay Gould versus Samuel George Morton on skulls and bias. *PLoS Biol* 9(6): e1001071.
- Lewontin, R. C. (2003) Science and simplicity. *New York Review of Books*, 1 May 2003.
- Li, X., Bucher, D., Nadim, F. (2018) Distinct co-modulation rules of synapses and voltage-gated currents coordinate interactions of multiple neuromodulators. *Journal of Neuroscience* 38:8549-8562.
- Libet, B. (1994) A testable field theory of mind–brain interaction. *Journal of Consciousness Studies* 1:119-126.
- Libet, B. (2006) Reflections on the interaction of the mind and brain. *Progress in Neurobiology* 78:322-326.
- Libet, B., Wright, E. W., Feinstein, B. and Pearl, D. K. (1979) Subjective referral of the timing for a conscious sensory experience – a functional role for the somatosensory specific projection system in man. *Brain* 102:193-224.
- Liebkecht, K. (1908) *Karl Marx: Biographical Memoirs* (Chicago: Kerr).
- Lillicrap, T. P., Cownden, D., Tweed, D. B. and Akerman, C. J. (2016) Random synaptic feedback weights support error backpropagation for deep learning. *Nature Communications* 7:13276.
- Lind, R. E. (2007) *The Seat of Consciousness in Ancient Literature* (London: McFarland).

- Lisman, J., Buzsáki, G., Eichenbaum, H., et al. (2017) Viewpoints: how the hippocampus contributes to memory, navigation and cognition. *Nature Neuroscience* 20:1434-1447.
- Lisowski, F. P. (1967) Prehistoric and early historic trepanation. In: D. Brothwell and A. T. Sanderson (eds.) *Diseases in Antiquity: A Survey of the Diseases, Injuries and Surgery of Early Populations* (Springfield: Thomas), pp. 651-672.
- Litt, A., Eliasmith, C., Kroon, F. W., et al. (2006) Is the brain a quantum computer? *Cognitive Science* 30:593-603.
- Liu, X., Ramirez, R. and Tonegawa, S. (2014) Inception of a false memory by optogenetic manipulation of a hippocampal memory engram. *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 369:20130142.
- Liu, Y., Dolan, R. R., Kurth-Nelson, Z. and Behrens, T. E. J. (2019) Human replay spontaneously reorganizes experience. *Cell* 178:640-652.
- Lloyd, G. E. R. (1991) Alcmaeon and the early history of dissection. In: G. E. R. Lloyd (ed.) *Methods and Problems in Greek Science: Selected Papers* (Cambridge: Cambridge University Press), pp. 164-198.
- Lloyd Morgan, C. (1896) *An Introduction to Comparative Psychology* (New York: Walter Scott).
- Lloyd Morgan, C. (1900) *Animal Behaviour* (London: Edward Arnold).
- Loeb, J. (1912) *The Mechanistic Conception of Life: Biological Essays* (Chicago: University of Chicago Press).
- Loeb, J. (1918) *Forced Movements, Tropisms, and Animal Conduct* (Philadelphia: Lippincott).
- Loewi, O. (1960) An autobiographic sketch. *Perspectives in Biology and Medicine* 4:3-25.
- Logothetis, N. K. (2008) What we can do and what we cannot do with fMRI. *Nature* 453:869-878.
- Logothetis, N. K., Pauls, J., Augath, M., et al. (2001) Neurophysiological investigation of the basis of the fMRI signal. *Nature* 412:150-157.
- Lømo, T. (2017) Discovering long-term potentiation (LTP) – recollections and reflections on what came after. *Acta Physiologica* 222:e12921.
- Longet, F.-A. (1842) *Anatomie et physiologie du système nerveux de l'homme et des animaux vertébrés, tome premier* (Paris: Fortin, Masson et Cie).
- Loomer, H. P., Saunders, J. C. and Kline, N. S. (1957) A clinical and pharmacodynamic evaluation of iproniazid as a psychic energizer. *Psychiatric Research Reports* 8:129-141.

- López-Muñoz, F., Boya, J. and Alamo, C. (2006) Neuron theory, the cornerstone of neuroscience, on the centenary of the Nobel Prize award to Santiago Ramón y Cajal. *Brain Research Bulletin* 70:391-405.
- Lorente de Nó, R. (1938) Analysis of the activity of the chains of internuncial neurons. *Journal of Neurophysiology* 1:207-244.
- Lotka, A. J. (1925) *Elements of Physical Biology* (Baltimore: Williams & Wilkins).
- Lurie, S. N. (1991) Psychological issues in treatment of the ‘chemical imbalance’. *American Journal of Psychotherapy* 45:348-358.
- Lüscher, C. and Malenka, R. C. (2011) Drug-evoked synaptic plasticity in addiction: From molecular changes to circuit remodeling. *Neuron* 69:650-663.
- Luzzatti, C. and Whitaker, H. (2001) Jean-Baptiste Bouillaud, Claude-François Lallemand, and the role of the frontal lobe: location and mislocation of language in the early 19th century. *Archives of Neurology* 58:1157-1162.
- Lyell, C. (1863) *Geological Evidences of the Antiquity of Man* (London: John Murray).
- MacKay, D. M. (1951) Mindlike behaviour in artefacts. *The British Journal for the Philosophy of Science* 2:105-121.
- MacLean, P. D. (1990) *The Triune Brain in Evolution: Role in Paleocerebral Functions* (New York: Plenum).
- Macmillan, M. (2000) *An Odd Kind of Fame: Stories of Phineas Gage* (London: MIT Press).
- Magnus, R. (1930) *Lane Lectures on Experimental Pharmacology and Medicine* (Stanford: Stanford University Press).
- Magoun, H. W. (1954) The ascending reticular system and wakefulness. In: J. F. Delafresnaye (ed.) *Brain Mechanisms and Consciousness* (Oxford: Blackwell Scientific), pp. 1-20.
- Maguire, E. A., Burgess, N., Donnett, J. G., et al. (1998) Knowing where and getting there: a human navigation network. *Science* 280:921-924.
- Maguire, E. A., Gadian, D. G., Johnsrude, I. S., et al. (2000) Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences USA* 97:4398-4403.
- Makari, G. (2015) *Soul Machine: The Invention of the Modern Mind* (London: Norton).
- Maler, L. (2018) Brain evolution: intelligence without a cortex. *Current Biology* 28:R213-R215.
- Malin, D. and Guttman, H. (1972) Synthetic rat scotophobin induces dark avoidance in mice. *Science* 178:1219-1220.

- Malpighi, M. (1666) An account of some discoveries concerning the brain, and the tongue, made by Signior Malpighi, Professor of Physick in Sicily. *Philosophical Transactions of the Royal Society* 2:491-492.
- Manzoni, T. (1998) The cerebral ventricles, the animal spirits and the dawn of brain localization of function. *Archives Italiennes de Biologie* 136:103-152.
- Maoz, U., Yaffe, G., Koch, C. and Mudrik, L. (2019) Neural precursors of deliberate and arbitrary decisions in the study of voluntary action. <https://www.biorxiv.org/content/10.1101/097626v8>
- Marcum, J. A. (2006) ‘Soup’ vs. ‘sparks’: Alexander Forbes and the synaptic transmission controversy. *Annals of Science* 63:139-156.
- Marcus, G. (2016) The computational brain. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World’s Leading Neuroscientists* (Oxford: Princeton University Press), pp. 204-215.
- Marder, E. and Bucher, D. (2001) Central pattern generators and the control of rhythmic movements. *Current Biology* 11:R986-R996.
- Margulies, D. S. (2012) The salmon of doubt: six months of methodological controversy within social neuroscience. In: S. Choudhury and J. Slaby (eds.) *Critical Neuroscience: A Handbook of the Social and Cultural Contexts of Neuroscience* (Oxford: Blackwell), pp. 273-285.
- Markram, H., Meier, K., Lippert, T., et al. (2011) Introducing the human brain project. *Procedia Computing Science* 7:39-42.
- Markram, H., Muller, E., Ramaswamy, S., et al. (2015) Reconstruction and simulation of neocortical microcircuitry. *Cell* 163:456-492.
- Marr, D. (1976) Analyzing natural images: a computational theory of texture vision. *Cold Spring Harbor Symposia on Quantitative Biology* 40:647-662.
- Marr, D. (1982) *Vision* (London: W. H. Freeman).
- Marr, D. and Hildreth, E. (1980) Theory of edge detection. *Proceedings of the Royal Society: Biological Sciences* 207:187-217.
- Mars, R. B., Sotiropoulos, S. N., Passingham, R. E., et al. (2018) Whole brain comparative anatomy using connectivity blueprints. *eLife* 7:e35237.
- Marshall, L. H. (2004) Horace Winchell Magoun 1907-1991: a biographical memoir. *Biographical Memoirs* 84:251-269.
- Marshall, J. H., Kim, Y. S., Machado, T. A., et al. (2019) Cortical layer-specific critical dynamics triggering perception. *Science* 365:eaaw5202.

- Martensen, R. L. (2004) *The Brain Takes Shape* (Oxford: Oxford University Press).
- Martinez-Conde, S., Macknik, S. and Heeger, D. J. (2018) An enduring dialogue between computational and empirical vision. *Trends in Neurosciences* 41:163-165.
- Marzullo, T. C. (2017) The missing manuscript of Dr. Jose Delgado's radio controlled bulls. *The Journal of Undergraduate Neuroscience Education (JUNE)* 15:R29-R35.
- Masani, P. R. (1990) *Norbert Wiener 1894-1964* (Basel: Birkhäuser Verlag).
- Massimini, M. and Tononi, G. (2018) *Sizing Up Consciousness: Towards an Objective Measure of the Capacity for Experience* (Oxford: Oxford University Press).
- Matteucci, C. (1842) Deuxième mémoire sur le courant électrique propre de la grenouille et sur celui des animaux à sang chaud. *Annales de chimie et de physique Série 3* 6:301-339.
- Matteucci, C. (1844) *Traité des phénomènes électro-physiologiques des animaux* (Paris: Fortin, Masson et Cie).
- Matteucci, C. (1845) Electro-physiological researches. Third memoir. On induced contractions. *Philosophical Transactions of the Royal Society of London* 135:303-317.
- Matteucci, C. (1850) Electro-physiological researches. On induced contraction. Ninth series. *Philosophical Transactions of the Royal Society of London* 140:645-649.
- Maturana, H. R., Lettvin, J. Y., McCulloch, W. S. and Pitts, W. H. (1960) Anatomy and physiology of vision in the frog (*Rana pipiens*). *Journal of General Physiology* 43:129-176.
- Maudsley, H. (1867) *The Physiology and Pathology of the Mind* (New York: Appleton).
- Maudsley, H. (1872) An address on medical psychology. *The Lancet* 100:185-189.
- Maudsley, H. (1883) *Body and Will* (London: Kegan Paul, Trench).
- Mauro, A. (1969) The role of the Voltaic pile in the Galvani-Volta controversy concerning animal vs metallic electricity. *Journal of the History of Medicine* 24:140-150.
- Mayor, A. (2018) *Gods and Robots: Myths, Machines, and Ancient Dreams of Technology* (Princeton: Princeton University Press).
- McComas, A. J. (2011) *Galvani's Spark: The Story of the Nerve Impulse* (Oxford: Oxford University Press).
- McConnell, J. V., Jacobson, A. L. and Kimble, D. P. (1959) The effects of regeneration upon retention of a conditioned response in the planarian. *Journal of Comparative and Physiological Psychology* 52:1-5.
- McCorduck, P. (1979) *Machines Who Think: A Personal Inquiry into the History and Prospects of Artificial Intelligence*. (San Francisco: W. H. Freeman).

- McCulloch, W. S. and Pitts, W. H. (1943) A logical calculus of the ideas immanent in nervous activity. *Bulletin of Mathematical Biophysics* 5:115-133.
- McCulloch, W. S. (1951) Why the mind is in the head. In: L. A. Jeffress (ed.) *Cerebral Mechanisms in Behavior: The Hixon Symposium* (New York: Wiley), pp. 45-57.
- McCulloch, W. S. (1965) *Embodiments of Mind* (Cambridge, MA: MIT Press).
- McDougall, W. (1905) *Physiological Psychology* (London: Dent).
- McGrath, C. L., Kelley, M. E., Holtzheimer, P. E., et al. (2013) Toward a neuroimaging treatment selection biomarker for major depressive disorder. *JAMA Psychiatry* 70:821-829.
- McGrath, L. S. (2014) The brain in the Third Republic: science, pedagogy, and national regeneration. *Journal of the Western Society for French History* 42:1-12.
- McLaren, A. (1981) A prehistory of the social sciences: Phrenology in France. *Comparative Studies in Society and History* 23:3-22.
- Mendels, J. and Frazer, A. (1974) Brain biogenic amine depletion and mood. *Archives of General Psychiatry* 30:447-451.
- Meulders, M. (2010) *Helmholtz: From Enlightenment to Neuroscience* (Boston: MIT Press).
- Meyer, D. R. and Meyer, P. M. (1963) Brain functions. *Annual Review of Psychology* 14:155-174.
- Meyer, M. (1911) *The Fundamental Laws of Human Behaviour* (Boston: Badger).
- Micheau, F. (1994) ‘Alī ibn al-‘Abbās Mağūsī et son milieu. In: C. Burnett and D. Jacquart (eds.) *Constantine the African and ‘Alī ibn al-‘Abbās Mağūsī: The Pantegni and Related Texts* (London: Brill).
- Miessner, B. F. (1916) *Radiodynamics: The Wireless Control of Torpedoes and Other Mechanisms* (New York: Van Nostrand).
- Miller, G. (2005) What is the biological basis of consciousness? *Science* 309:79.
- Miller, G. (1962) *Psychology: The Science of Mental Life* (New York: HarperCollins).
- Miller, M. B., Sinnott-Armstrong, W., Young, L., et al. (2010) Abnormal moral reasoning in complete and partial callosotomy patients. *Neuropsychologia* 48:2215-2220.
- Milner, A. D. (2017) How do the two visual streams interact with each other? *Experimental Brain Research* 235:1297-1308.
- Milner, B., Corkin, S., and Teuber, H. L. (1968) Further analysis of the hippocampal amnesic syndrome: 14-year follow-up study of H. M. *Neuropsychologia* 6:215-234.
- Minsky, M. and Papert, S. (1969) *Perceptrons: An Introduction to Computational Geometry* (Cambridge, MA: MIT Press).



- Miroschnikow, A., Schlegel, P., Schoofs, A., et al. (2018) The feeding connectome: convergence of monosynaptic and polysynaptic sensory paths onto common motor outputs. *eLife* 7:e40247.
- Mischiati, M., Lin, H. T., Herold, P., et al. (2015) Internal models direct dragonfly interception steering. *Nature* 517:333-338.
- Mitchell, K. J. (2015) The miswired brain, genes, and mental illness. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp. 234-242.
- Mitchell, K. J. (2018) *Innate: How the Wiring of Our Brains Shapes Who We Are* (Oxford: Princeton University Press).
- Moan, C. E. and Heath, R. G. (1972) Septal stimulation for the initiation of heterosexual behavior in a homosexual male. *Journal of Behavior Therapy and Experimental Psychiatry* 3:23-30.
- Moffitt, J. R., Bambah-Mukku, D., Eichhorn, S. W., et al. (2018) Molecular, spatial, and functional single-cell profiling of the hypothalamic preoptic region. *Science* 362:eaau5324.
- Mohebi, A., Pettibone, J. R., Hamid, A. A., et al. (2019) Dissociable dopamine dynamics for learning and motivation. *Nature* 570:65-70.
- Morabito, C. (2017) Plastic maps: the new brain cartographies of the 21th-century neurosciences. From phrenological heads to connectomics. *Nuncius* 32:472-500.
- Morange, M. (2006) What history tells us.VI: The transfer of behaviours by macromolecules. *Journal of Bioscience* 31:323-327.
- Morange, M. (2016) *Une Histoire de la biologie* (Paris: Seuil).
- Morgan, J. L. and Lichtman, J. W. (2013) Why not connectomics? *Nature Methods* 10:494-500.
- Morgan, J. L. and Lichtman, J. W. (2019) An individual interneuron participates in many kinds of inhibition and spans much of the mouse visual thalamus. <https://www.biorxiv.org/content/10.1101/683276v1>.
- Morsella, E., Godwin, C. A., Jantz, T. K., et al. (2016) Homing in on consciousness in the nervous system: an action-based synthesis. *Behavioral and Brain Sciences* 39:e168.
- Morton, W. J. (1880) Induced hysterical somnambulism and catalepsy. *Scientific American Supplement* 256:4085-4086.
- Morus, I. R. (1998) *Frankenstein's Children: Electricity, Exhibition, and Experiment in Early-Nineteenth-Century London* (Princeton: Princeton University Press).
- Moruzzi, G. and Magoun, H. W. (1949) Brain stem reticular formation and activation of the EEG. *Electroencephalography and Clinical Neurophysiology* 1:455-473.

- Moser, E. I. (2014) Nobel Prize Lecture. <https://www.nobelprize.org/prizes/medicine/2014/edvard-moser/lecture>
- Moser, E. I., Kropff, E. and Moser, M.-B. (2008) Place cells, grid cells, and the brain's spatial representation system. *Annual Review of Neuroscience* 31:69-89.
- Moser, M.-B. (2014) Nobel Prize Lecture. <https://www.nobelprize.org/prizes/medicine/2014/may-britt-moser/lecture>
- Motta, A., Berning, M., Boergens, K. M., et al. (2019) Dense connectomic reconstruction in layer 4 of the somatosensory cortex. *Science* 10.1126/science.aay3134.
- Mountcastle, V. B. (1957) Modality and topographic properties of single neurons of cat's somatic sensory cortex. *Journal of Neurophysiology* 20:408-434.
- Mountcastle, V. B. (1998) *Perceptual Neuroscience: The Cerebral Cortex* (Cambridge, MA: Harvard University Press).
- Mu, Y., Bennett, D. V., Rubinov, M., et al. (2019) Glia accumulate evidence that actions are futile and suppress unsuccessful behavior. *Cell* 178:27-43.
- Mukamel, R., Ekstrom, A. D., Kaplan, J., et al. (2010) Single-neuron responses in humans during execution and observation of actions. *Current Biology* 20:750-756.
- Müller, J. (1843) *Elements of Physiology* (Philadelphia: Lea and Blanchard).
- Munro, A. (1781) *The Works of Alexander Monro, M. D.* (Edinburgh: Elliot, Robinson).
- Nabavi, S., Fox, R., Proulx, C. D., et al. (2014) Engineering a memory with LTD and LTP. *Nature* 511:348-352.
- Naci, L., Cusack, R., Anello, M. and Owen, A. M. (2014) A common neural code for similar conscious experiences in different individuals. *Proceedings of the National Academy of Sciences USA* 111:14277-14282.
- Nagel, T. (1974) What is it like to be a bat? *The Philosophical Review* 83:435-450.
- Nagel, T. (2017) Consciousness and the physical sciences. In: K. Almquist and A. Haag (eds.) *The Return of Consciousness: A New Science on Old Questions* (Stockholm: Axel and Margaret Ax:son Johnson Foundation), pp. 41-46.
- Napoleon (1824) *Profils des contemporains* (Paris: Pollet).
- Nassim, C. (2018) *Lessons from the Lobster: Eve Marder's Work in Neuroscience* (Cambridge, MA: MIT Press).
- Needham, J. (1927) *Man a Machine* (London: Kegan Paul, Trench, Trubner).

- Neuburger, M. (1981) *The Historical Development of Experimental Brain and Spinal Cord Physiology Before Flourens* (London: John Hopkins University Press).
- Newman, L. (2001) Unmasking Descartes' case for the bête machine doctrine. *Canadian Journal of Philosophy* 31:389-426.
- Nicholson, D. (2019) Is the cell really a machine? *Journal of Theoretical Biology* 477:108-126.
- Niderst, A. (1969) *L'Ame matériel (ouvrage anonyme). Edition critique, avec une introduction et des notes.* (Paris: Nizet).
- Nobre, A. C. and van Ede, F. (2019) Under the mind's hood: what we have learned by watching the brain at work. *Journal of Neuroscience* 39 <https://doi.org/10.1523/JNEUROSCI.0742-19.2019>.
- Nordau, M. (1885) *Paradoxe* (Leipzig: Elischer Nachfolger).
- Nummenmaa, N., Glerean, E., Hari, R. and Hietanen, J. K. (2014) Bodily maps of emotions. *Proceedings of the National Academy of Sciences USA* 111:646-651.
- Nummenmaa, L., Hari, R., Hietanen, J. K. and Glerean, E. (2018) Maps of subjective feelings. *Proceedings of the National Academy of Sciences USA* 115:9198-9203.
- Nusbaum, N. P., Blitz, D. M. and Marder, E. (2017) Functional consequences of neuropeptide and small-molecule co-transmission. *Nature Reviews Neuroscience* 18:389-403.
- Nutt, D., Goodwin, G. M., Bhugra, D., et al. (2014) Attacks on antidepressants: signs of deep-seated stigma? *The Lancet Psychiatry* 1:102-104.
- Nutt, D. J., Lingford-Hughes, A., Erritzoe, D. and Stokes, P. R. A. (2015) The dopamine theory of addiction: 40 years of highs and lows. *Nature Reviews Neurosciences* 16:305-312.
- Nye, M. (1980) N-Rays: An episode in the history and psychology of science. *Historical Studies in the Physical Sciences* 11:125-156.
- O'Doherty, J. P., Dayan, P., Friston, K., et al. (2003) Temporal difference models and reward-related learning in the human brain. *Neuron* 38:329-337.
- O'Keefe, J. (2015) Spatial cells in the hippocampal formation. *The Nobel Prizes 2014*, pp. 275-307.
- O'Keefe, J. and Dostrovsky, J. (1971) The hippocampus as a spatial map. Preliminary evidence from unit activity in the freely-moving rat. *Brain Research* 34:171-175.
- Oby, E., Golub, M. D., Hennig, J. A., et al. (2019) New neural activity patterns emerge with long-term learning. *Proceedings of the National Academy of Sciences USA* 116:15210-15215.
- Odegaard, B., Knight, R. T. and Lau, H. (2017) Should a few null findings falsify prefrontal theories of conscious perception? *Journal of Neuroscience* 37:9593-9602.

- Odling, E. (1878) *Memoir of the Late Alfred Smee, FRS, by his Daughter* (London: Bell and Sons).
- Ohyama, T., Schneider-Mizell, C. M., Fetter, R. D., et al. (2015) A multilevel multimodal circuit enhances action selection in *Drosophila*. *Nature* 520:633-639.
- Ólafsdóttir, H. F., Barry, C., Saleem, A. B., et al. (2015) Hippocampal place cells construct reward related sequences through unexplored space. *eLife* 4:e06063.
- Olazaran, M. (1996) A sociological study of the official history of the Perceptrons controversy. *Social Studies of Science* 26:611-659.
- Olby, R. (1994) *The Path to the Double Helix: The Discovery of DNA* (New York: Dover).
- Olby, R. (2009) *Francis Crick: Hunter of Life's Secrets* (Cold Spring Harbor: Cold Spring Harbor Laboratory Press).
- Olds, J. (1958) Self-stimulation of the brain; its use to study local effects of hunger, sex, and drugs. *Science* 127:315-324.
- Olds, J. and Milner, P. (1954) Positive reinforcement produced by electrical stimulation of septal area and other regions of rat brain. *Journal of Comparative and Physiological Psychology* 47:419-427.
- Olson, M., Arroyo-Santos, A. and Vergara-Silva, F. (2019) A user's guide to metaphors in ecology and evolution. *Trends in Ecology and Evolution* 34:605-615.
- Omer, D., Maimon, S. R., Las, L. and Ulanovsky, N. (2018) Social place-cells in the bat hippocampus. *Science* 359:218-224.
- Ormel, P. R., Vieira de Sá, R., van Bodegraven, E. J., et al. (2018) Microglia innately develop within cerebral organoids. *Nature Communications* 9:4167.
- Osmond, H. and Smythies, J. (1952) Schizophrenia: a new approach. *Journal of Mental Science* 98:309-315.
- Otchy, T. M., Wolff, S. B. E., Rhee, J. Y., et al. (2015) Acute off-target effects of neural circuit manipulations. *Nature* 528:358-363.
- Otis, L. (2001) *Networking: Communicating with bodies and machines in the Nineteenth Century* (Ann Arbor: University of Michigan Press).
- Otis, L. (2002) The metaphoric circuit: organic and technological communication in the nineteenth century. *Journal of the History of Ideas* 63:105-128.
- Otis, L. (2007) *Müller's Lab* (Oxford: Oxford University Press).
- Owen, A., Coleman, M. R., Boly, M., et al. (2006) Detecting awareness in the vegetative state. *Science* 313:1402.

- Owen, A. M. (2019) The search for consciousness. *Neuron* 102:526-528.
- Pagán, O. (2019) The brain: a concept in flux. *Philosophical Transactions of the Royal Society B* 374:20180383.
- Pancaldi, G. (2003) *Volta: Science and Culture in the Age of Enlightenment* (Princeton: Princeton University Press).
- Pannese, E. (1999) The Golgi stain: Invention, diffusion and impact on neurosciences. *Journal of the History of the Neurosciences* 8:132-140.
- Padmanabhan, K., Osakada, F., Tarabrina, A., et al. (2019) Centrifugal inputs to the main olfactory bulb revealed through whole brain circuit-mapping. *Frontiers in Neuroanatomy* 12:115.
- Paré, D. and Quirk, G. J. (2017) When scientific paradigms lead to tunnel vision: lessons from the study of fear. *npj Science of Learning* 2:6.
- Parkin, S. (2018) Has dopamine got us hooked on tech? *The Observer* 4 March 2018 <https://www.theguardian.com/technology/2018/mar/04/has-dopamine-got-us-hooked-on-tech-facebook-apps-addiction>
- Parssinen, T. M. (1974) Popular science and society: The phrenology movement in early Victorian Britain. *Journal of Social History* 7:1-20.
- Partridge, D. (2015) 1 July 1858 and the 1844 essay: what Lyell and Hooker decided; and what Darwin did not want and did not know. *Biological Journal of the Linnean Society* 116:247-251.
- Parvizi, J., Rangarajan, V., Shirer, W. R., et al. (2013) The will to persevere induced by electrical stimulation of the human cingulate gyrus. *Neuron* 80:1359-1367.
- Pascual-Leone, A. and Walsh, V. (2001) Fast backprojections from the motion to the primary visual area necessary for visual awareness. *Science* 292:510-512.
- Pearce, J. M. S. (2006) Louis Pierre Gratiolet (1815-1865): The cerebral lobes and fissures. *European Neurology* 56:262-264.
- Penaloza, C. I. and Nishio, S. (2018) BMI control of a third arm for multitasking. *Science Robotics* 3:eaat1228.
- Penfield, W. (1952) Memory mechanisms. *Archives of Neurology and Psychiatry* 67:178-191.
- Penfield, W. (1954) Studies of the cerebral cortex of Man – A review and an interpretation. In: J. F. Delafresnaye (ed.) *Brain Mechanisms and Consciousness* (Oxford: Blackwell Scientific), pp. 284-304.

- Penfield, W. (1975) *The Mystery of the Mind: A Critical Study of Consciousness and the Human Brain* (Princeton: Princeton University Press).
- Penfield, W. and Boldrey, E. (1937) Somatic motor and sensory representation in the cerebral cortex of man as studied by electrical stimulation. *Brain* 60:389-443.
- Penfield, W. and Jasper, H. H. (1954) *Epilepsy and the Functional Anatomy of the Human Brain* (New York: Little, Brown).
- Penfield, W. and Rasmussen, T. (1950) *The Cerebral Cortex of Man* (New York: Macmillan).
- Pennartz, C. M. A. (2018) Consciousness, representation, action: The importance of being goal-directed. *Trends in Cognitive Sciences* 22:137-153.
- Penrose, R. (1995) *Shadows Of The Mind: A Search for the Missing Science of Consciousness* (London: Vintage).
- Perrett, D. I., Rolls, E. T. and Caan, W. (1982) Visual neurones responsive to faces in the monkey temporal cortex. *Experimental Brain Research* 47:329-342.
- Perry, C. J. and Chittka, L. (2019) How foresight might support the behavioral flexibility of arthropods. *Current Opinion in Neurobiology* 54:171-177.
- Pert, C. B. and Snyder, S. H. (1973) Opiate receptor: demonstration in nervous tissue. *Science* 179:1011-1014.
- Petersen, S. E., Fox, P. T., Posner, M. I., et al. (1988) Positron emission tomographic studies of the cortical anatomy of single-word processing. *Nature* 331:585-589.
- Phelps, E. and Hofmann, G. (2019) Memory editing from science fiction to clinical practice. *Nature* 572:43-50.
- Pias, C. (ed.) (2016) *Cybernetics: The Macy Conferences 1946-1953* (Zurich: Diaphenes).
- Piccinini, G. (2004) The first computational theory of mind and brain: A close look at McCulloch and Pitts's 'Logical calculus of ideas immanent in nervous activity' *Synthèse* 141:175-215.
- Piccolino, M. (2007) The taming of the electric ray: from a wonderful and dreadful 'art' to 'animal electricity' and 'electric battery'. In: H. Whitaker, C. U. M. Smith and S. Finger (eds.) *Brain, Mind and Medicine: Neuroscience in the 18th Century* (New York: Springer), pp. 125-143.
- Pickering, A. (2010) *The Cybernetic Brain: Sketches of Another Future* (London: Chicago University Press).
- Pies, R (2015) Response to Lacasse and Leo. *The Behavior Therapist* 38:260-262.
- Pignatelli, M. and Beyeler, A. (2019) Valence coding in amygdala circuits. *Current Opinion in Behavioral Sciences* 26:97-106.

- Pinto, Y., Neville, D. A., Otten, M., et al. (2017a) Split brain: divided perception but undivided consciousness. *Brain* 140:1231-1237.
- Pinto, Y., Lamme, V. A. F. and de Haan, E. H. F. (2017b) Cross-cueing cannot explain unified control in split-brain patients. *Brain* 140:e68.
- Pitts, W. (1942a) Some observations on the simple neuron circuit. *Bulletin of Mathematical Biophysics* 4:121-129.
- Pitts, W. (1942b) The linear theory of neuron networks: The static problem. *Bulletin for Mathematical Biophysics* 4:169-175.
- Place, U. T. (1956) Is consciousness a brain process? *British Journal of Psychology* 47:44-50.
- Plath, S. (2005) *The Bell Jar* (London: Faber & Faber).
- Pogliano, C. (2012) Penfield's homunculus and other grotesque creatures from the Land of If. *Nuncius* 27:141-162.
- Pogliano, C. (2017) Lucky triune brain. Chronicles of Paul D. MacLean's neuro-catchword. *Nuncius* 32:330-375.
- Poldrack, R. A. (2017) The risks of reading the brain. *Nature* 541:156.
- Poldrack, R. (2018) *The New Mind Readers: What Neuroimaging Can and Cannot Reveal About Our Thoughts* (Princeton: Princeton University Press).
- Poldrack, R. A. and Farah, M. J. (2015) Progress and challenges in probing the human brain. *Nature* 526:371-379.
- Poldrack, R. A., Baker, C. I., Durnez, J., et al. (2017) Scanning the horizon: towards transparent and reproducible neuroimaging research. *Nature Reviews Neuroscience* 18:115-126.
- Pollan, M. (2018) *How to Change Your Mind: The New Science of Psychedelics* (London: Allen Lane).
- Pollen, A., Bhaduri, A., Andrews, M. G., et al. (2019) Establishing cerebral organoids as models of human-specific brain evolution. *Cell* 176:743-756.
- Pollen, D. A. (1995) Cortical areas in visual awareness. *Nature* 377:293-294.
- Pollin, W. (1979) Pert and the Lasker Award. *Science* 204:8.
- Ponce, C., Xiao, W., Schade, P. F., et al. (2019) Evolving images for visual neurons using a deep generative network reveals coding principles and neuronal preferences. *Cell* 177:999-1009.
- Poo, M.-M., Pignatelli, M., Ryan, T. J., et al. (2016) What is memory? The present state of the engram. *BMC Biology* 14:40.

- Pranghofer, S. (2009) ‘It could be Seen more Clearly in Unreasonable Animals than in Humans’: The representation of the rete mirabile in early modern anatomy. *Medical History* 53:561-586.
- Preller, K. H., Razi, A., Zeidman, P., et al. (2019) Effective connectivity changes in LSD-induced altered states of consciousness in humans. *Proceedings of the National Academy of Sciences USA* 116:2743-2748.
- Pribram, K. (1969) The neurophysiology of remembering. *Scientific American*, January 1969, pp. 73-86.
- Priestley, J. (1769) *The History and Present State of Electricity, with Original Experiments* (London: Dodsley, Johnson, Payne, Cadell).
- Priestley, J. (1777) *Disquisitions Relating to Matter and Spirit* (London: Johnson).
- Priestley, J. (1778) *A Free Discussion of the Doctrines of Materialism, and Philosophical Necessity, In a Correspondence between Dr. Price, and Dr. Priestley* (London: Johnson, Cadell).
- Prinz, A. A., Bucher, D. and Marder, E. (2004) Similar network activity from disparate circuit parameters. *Nature Neuroscience* 7:1345-1352.
- Prior, H., Schwarz, A. and Güntürkün, O. (2008) Mirror-induced behavior in the magpie (*Pica pica*): Evidence of self-recognition. *PLoS Biology* 6:e202.
- Quadrato, G., Nguyen, T., Macosko, E. Z., et al. (2017) Cell diversity and network dynamics in photosensitive human brain organoids. *Nature* 545:48-53.
- Quian Quiroga, R., Fried, I. and Koch, C. (2013) Brain cells for grandmother. *Scientific American* February 2013, pp. 31-35.
- Quian Quiroga, R., Reddy, L., Kreiman, G., et al. (2005) Invariant visual representation by single neurons in the human brain. *Nature* 435:1102-1107.
- Quian Quiroga, R., Reddy, L., Kreiman, G., et al. (2008) Sparse but not ‘Grandmother-cell’ coding in the medial temporal lobe. *Trends in Cognitive Science* 12:87-91.
- Racine, E., Bar-Ilan, O. and Illes, J. (2005) fMRI in the public eye. *Nature Reviews Neuroscience* 6:159-164.
- Raichle, M. E. (2008) A brief history of human brain mapping. *Trends in Neurosciences* 32:118-126.
- Raichle, M. E. (2015) The brain’s default mode network. *Annual Review of Neuroscience* 38:433-447.
- Raichle, M. E., MacLeod, A. M., Snyder, A. Z., et al. (2001) A default mode of brain function. *Proceedings of the National Academy of Sciences USA* 98:676-682.



- Rajalingham, R., Issa, E. B., Bashivan, P., et al. (2018) Large-scale, high-resolution comparison of the core visual object recognition behaviour of humans, monkeys, and state-of-the-art deep artificial neural networks. *Journal of Neuroscience* 38:7255-7269.
- Ramachandran, V. (2011) *The Tell-Tale Brain: Unlocking the Mystery of Human Nature* (London: Norton).
- Ramaswamy, S., Courcol, J.-D., Abdellah, M., et al. (2015) *Frontiers in Neural Circuits* 9:44.
- Ramirez, S., Liu, X., Lin, P.-A., et al. (2013) Creating a false memory in the hippocampus. *Science* 341:387-391.
- Ramirez, S., Liu, X., MacDonald, C. J., et al. (2015) Activating positive memory engrams suppresses depression-like behaviour. *Nature* 522:335-339.
- Rangarajan, V., Hermes, D., Foster, B. L., et al. (2014) Electrical stimulation of the left and right human fusiform gyrus causes different effects in conscious face perception. *Journal of Neuroscience* 34:12828-12836.
- Ranvier, L.-A. (1878) *Leçons sur l'Histologie du système nerveux* (Paris: Savy).
- Rashevsky, N. (1936) Mathematical biophysics and psychology. *Psychometrika* 1:1-26.
- Reardon, S. (2017) AI-controlled brain implants for mood disorders tested in people. *Nature* 551:549-550.
- Redondo, R. L., Kim, J., Arons, A. L., et al. (2014) Bidirectional switch of the valence associated with a hippocampal contextual memory engram. *Nature* 513: 426-430.
- Reimann, M. W., Muller, E. B., Ramaswamy, S. and Markram, H. (2015) *Frontiers in Computational Neuroscience* 9:28.
- Reiner, A. (1990) An explanation of behaviour. *Science* 250:303-305.
- Reiner, J. M. (1947) Mathematical biophysics of the nervous system. *Quarterly Review of Biology* 22:85-86.
- Reynolds, A. (2018) *The Third Lens: Metaphor and the Creation of Modern Cell Biology* (Chicago: University of Chicago Press).
- Richards, B. A., Lillicrap, T. P., Beaudouin, P., et al. (2019) A deep learning framework for neuroscience. *Nature Neuroscience* 22:1761-1770.
- Richards, R. J. (1987) *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior* (Chicago: Chicago University Press).
- Richards, R. J. (2009) Darwin on mind, morals and emotions. In: J. Hodge and G. Radick (eds.) *The Cambridge Companion to Darwin* (Cambridge: Cambridge University Press), pp. 96-119.

- Rignano, E. (1926) *Man Not a Machine: A Study of the Finalistic Aspects of Life* (London: Kegan Paul, Trench, Trubner).
- Rippon, G. (2019) *The Gendered Brain: The New Neuroscience That Shatters the Myth of the Female Brain* (London: Bodley Head).
- Riskin, J. (2016) *The Restless Clock: A History of the Centuries-Long Argument over What Makes Living Things Tick* (Chicago: Chicago University Press).
- Ritchie, S. J., Cox, S. R., Shen, X., et al. (2018) Sex differences in the adult human brain: evidence from 5216 UK Biobank participants. *Cerebral Cortex* 28:2959-2975.
- Rizzolatti, G. and Craighero, L. (2004) The mirror-neuron system. *Annual Review of Neuroscience* 27:169-192.
- Roberts, T. F., Tschida, K. A., Klein, M. E. and Mooney, R. (2010) Rapid spine stabilization and synaptic enhancement at the onset of behavioural learning. *Nature* 463:948-952.
- Robinson, D. (1992) Implications of neural networks for how we think about brain function. *Behavioral and Brain Sciences* 14:644-655.
- Robinson, J. D. (2001) *Mechanisms of Synaptic Transmission: Bridging the Gaps (1890-1990)* (Oxford: Oxford University Press).
- Rocca, J. (2003) *Galen on the Brain: Anatomical Knowledge and Physiological Speculation in the Second Century A.D.* (Leiden: Brill).
- Rochester, N., Holland, J., Haibt, L. and Duda, W. (1956) Tests on a cell assembly theory of the action of the brain, using a large digital computer. *IRE Transactions on Information Theory* 2:80-93.
- Rogers, J. (1998) ‘The prayer, the passion and the reason’ of Eliza Sharples: freethought, women’s rights and republicanism, 1832-52. In: E. J. Yeo (ed.) *Radical Femininity: Women’s Representation in the Public Sphere* (Manchester: Manchester University Press), pp. 52-78.
- Roget, P. M. (1824a) Physiology. *Supplement to the Fourth, Fifth, and Sixth Editions of the Encyclopaedia Britannica, volume 6* (Edinburgh: Constable).
- Roget, P. M. (1824b) Cranioscopy. *Supplement to the Fourth, Fifth, and Sixth Editions of the Encyclopaedia Britannica, volume 3* (Edinburgh: Constable).
- Rose, N. (2019) *Our Psychiatric Future: The Politics of Mental Health* (Cambridge: Polity).
- Rose, S. (2005) *The 21st Century Brain: Explaining, Mending and Manipulating the Mind* (London: Cape).

- Rosenblatt, F. (1958) The perceptron: a probabilistic model for information storage and organization in the brain. *Psychological Review* 65:386-408.
- Rosenblatt, F. (1959) *Two Theorems of Statistical Separability in the Perceptron* (Buffalo: Cornell Aeronautical Laboratory).
- Rosenblatt, F. (1961) *Principles of Neurodynamics: Perceptrons and the Theory of Brain Mechanisms. Report No. 1196-G-8, 15 March 1961* (Buffalo: Cornell Aeronautical Laboratory).
- Rosenblueth, A., Wiener, N. and Bigelow, J. (1943) Behavior, purpose and teleology. *Philosophy of Science* 10:18-24.
- Ross, T. (1933) Machines that think. *Scientific American* 148:206-208.
- Ross, T. (1935) Machines that think. A further statement. *Psychological Review* 42:387-393.
- Ross, T. (1938) The synthesis of intelligence – its implications. *Psychological Review* 45:185-189.
- Rumelhart, D. E. and McClelland, J. L. (1986) On learning the past tenses of English verbs. In: D. E. Rumelhart, J. L. McClelland and the PDP Research Group (eds.) *Parallel Distributed Processing: Explorations in the Microstructure of Cognition. Volume 1: Foundations* (Cambridge, MA: MIT Press), pp. 216-271.
- Rumelhart, D. E., McClelland, J. L. and the PDP Research Group (eds.) (1986) *Parallel Distributed Processing: Explorations in the Microstructure of Cognition. Volume 1: Foundations; Volume 2: Psychological and Biological Models* (Cambridge, MA: MIT Press).
- Rusconi, E. and Mitchener-Nissen, T. (2013) Prospects of functional magnetic resonance imaging as lie detector. *Frontiers in Human Neuroscience* 7:594.
- Russell, S. B. (1913) A practical device to simulate the working of nervous discharges. *Journal of Animal Behavior* 3:15-35.
- Rutten, G.-J. (2017) *The Broca-Wernicke Doctrine. A Historical and Clinical Perspective on Localization of Language Functions* (Cham, Switzerland: Springer).
- Ryan, K., Lu, Z. and Meinertzhagen, I. A. (2016) The CNS connectome of a tadpole larva of *Ciona intestinalis* (L.) highlights sidedness in the brain of a chordate sibling. *eLife* 5:e16962.
- Ryan, T. J., Roy, D. S., Pignatelli, M., et al. (2015) Engram cells retain memory under retrograde amnesia. *Science* 348:1007-1013.
- Ryle, G. (1949) *The Concept of Mind* (London: Hutchinson).

- Sagan, C. (1977) *The Dragons of Eden: Speculations on the Evolution of Human Intelligence*. (London: Hodder and Stoughton).
- Sahakian, B. J. and Gottwald, J. (2017) *Sex, Lies, and Brain Scans: How fMRI Reveals What Really Goes on in our Minds* (Oxford: Oxford University Press).
- Sajous-Turner, A., Anderson, N. E., Widdows, M., et al. (2019) Aberrant brain gray matter in murderers. *Brain Imaging and Behavior* <https://doi.org/10.1007/s11682-019-00155-y>
- Sakurai, A. and Katz, P. S. (2017) Artificial synaptic rewiring demonstrates that distinct neural circuit configurations underlie homologous behaviours. *Current Biology* 27:1721-1734.
- Salinas-Hernández, X. I., Vogel, P., Betz, S., et al. (2018) Dopamine neurons drive fear extinction learning by signaling the omission of expected aversive outcomes. *eLife* 7:e38818.
- Sanchez, G. and Meltzer, E. (2012) *The Edwin Smith Papyrus: Updated Translation of the Trauma Treatise and Modern Medical Commentaries* (Atlanta: Lockwood Press).
- Sarasso, S. Boly, M., Napolitani, M., et al. (2015) Consciousness and complexity during unresponsiveness induced by propofol, xenon, and ketamine. *Current Biology* 25:3099-3105.
- Sasaki, T., Beppu, K., Tanaka, K. F., et al. (2012) Application of an optogenetic byway for perturbing neuronal activity via glial photostimulation. *Proceedings of the National Academy of Sciences USA* 109:20720-20725.
- Satel, S. and Lilienfeld, S. O. (2013) *Brainwashed: The Seductive Appeal of Mindless Neuroscience* (New York: Basic).
- Saunders, B. T., Richard, J. M., Margolis, E. B. and Janak, P. H. (2018) Dopamine neurons create Pavlovian conditioned stimuli with circuit-defined motivational properties. *Nature Neuroscience* 21:1072-1083.
- Saur, D., Kreher, B. W., Schnell, S., et al. (2008) Ventral and dorsal pathways for language. *Proceedings of the National Academy of Sciences USA* 105:18035-18040.
- Savage-Smith, E. (1995) Attitudes toward dissection in medieval Islam. *Journal of the History of Medicine and Allied Sciences* 50:67-110.
- Savtchouk, I. and Volterra, A. (2018) Gliotransmission: beyond black-and-white. *Journal of Neuroscience* 38:14-25.
- Saxena, S. and Cunningham, J. P. (2019) Towards the neural population doctrine. *Current Opinion in Neurobiology* 55:103-111.

- Schechter, E. (2018) *Self-Consciousness and ‘Split’ Brains: The Mind’s I* (Oxford: Oxford University Press).
- Schildkraut, J. J. (1965) The catecholamine hypothesis of affective disorders: A review of supporting evidence. *American Journal of Psychiatry* 122:509-522.
- Schiller, F. (1963) In Memoriam – Leborgne. *Medical History* 7:79-81.
- Schiller, F. (1979) *Paul Broca: Founder of French Anthropology, Explorer of the Brain* (Berkeley: University of California Press).
- Scholz, M., Linder, A. N., Randi, F., et al. (2018) Predicting natural behavior from whole-brain neural dynamics. <https://www.biorxiv.org/content/10.1101/445643v1>
- Schott, G. D. (1993) Penfield’s homunculus: a note on cerebral cartography. *Journal of Neurology, Neurosurgery and Psychiatry* 56:329-333.
- Schou, M., Juel-Nielsen, N., Stromgren, E. and Voldby, H. (1954) The treatment of manic psychoses by the administration of lithium salts. *Journal of Neurology, Neurosurgery and Psychiatry* 17:250-260.
- Schuck, N. W. and Niv, Y. (2019) Sequential replay of nonspatial task states in the human hippocampus. *Science* 364:eaaw5181.
- Scoville, W. B. and Milner, B. (1957) Loss of recent memory after bilateral hippocampal lesions. *Journal of Neurology, Neurosurgery and Psychiatry* 20:11-21.
- Sechenov, I. (1965) *Reflexes of the Brain* (Cambridge, Mass: MIT Press).
- Secord, J. A. (2000) *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation* (Chicago: University of Chicago Press).
- Sejnowski, T. J. (2015) Consciousness. *Daedalus* 144:123-132.
- Sejnowski, T. J. (2018) *The Deep Learning Revolution* (London: MIT Press).
- Sejnowski, T. J. and Rosenberg, C. R. (1987) Parallel networks that learn to pronounce English text. *Complex Systems* 1:145-168.
- Selfridge, O. G. (1959) Pandemonium: A paradigm for learning. *Symposium on the Mechanisation of Thought Processes* (London: HMSO), pp. 513-526.
- Silverston, A. I. (1980) Are central pattern generators understandable? *Behavioral and Brain Sciences* 3:535-540.
- Serban, M. (2017) Learning from large-scale neural simulations. *Progress in Brain Research* 233:129-148.

- Seth, A. K. (2015) The cybernetic Bayesian brain: from interoceptive inference to sensorimotor contingencies. In: T. K. Metzinger and J. M. Windt (eds.) *Open MIND* (Frankfurt: MIND Group), pp. 1-24.
- Seth, A. K. (2017) The fall and rise of consciousness science. In: K. Almqvist and A. Haag (eds.) *The Return of Consciousness: A New Science on Old Questions* (Stockholm: Axel and Margaret Ax:son Johnson Foundation), pp. 13-37.
- Seth, A. K. and Tsakiris, M. (2018) Being a beast machine: the somatic basis of selfhood. *Trends in Cognitive Sciences* 22:969-981.
- Setlow, B. (1997) Georges Ungar and memory transfer. *Journal of the History of the Neurosciences* 6:181-192.
- Seung, S. (2012) *Connectome: How the Brain's Wiring Makes Us Who We Are* (Boston: Houghton Mifflin Harcourt).
- Seyfarth, E.-A. (2006) Julius Bernstein (1839-1917): pioneer neurobiologist and biophysicist. *Biological Cybernetics* 94:2-8.
- Sharples, E. (1832) The Seventh discourse of the Lady at the Rotunda. *The Isis* 6:81-85.
- Shea, N. and Frith, C. D. (2019) The global workspace needs metacognition. *Trends in Cognitive Sciences* 23:560-571.
- Shelley, M. (2003) *Frankenstein* (London: Penguin).
- Shen, H. H. (2014) Inner workings: Discovering the split mind. *Proceedings of the National Academy of Sciences USA* 111:18097.
- Shepherd, G. M. (1999) The legacy of Camillo Golgi for modern concepts of brain organization. *Journal of the History of the Neurosciences* 8:209-214.
- Shepherd, G. M. (2010) *Creating Modern Neuroscience: The Revolutionary 1950s* (Oxford: Oxford University Press).
- Shepherd, G. M. (2016) *Foundations of the Neuron Doctrine. 25th Anniversary Edition* (Oxford: Oxford University Press).
- Sherrington, C. S. (1906) *The Integrative Action of the Nervous System* (New Haven: Yale University Press).
- Sherrington, C. S. (1940) *Man on his Nature* (Cambridge: University Press).
- Shimizu, K. and Stopfer, M. (2013) Gap junctions. *Current Biology* 23:R1026-R1031.

- Shogimen, T. (2009) Imagining the body politic: Metaphor and political language in late medieval Europe and Tokugawa Japan. In: C. J. Nederman and T. Shogimen (eds.) *Western Political Thought in Dialogue With Asia* (Plymouth: Lexington), pp. 279-300.
- Shore, P. A., Silver, S. L. and Brodie, B. B. (1955) Interaction of reserpine, serotonin, and lysergic acid diethylamide in brain. *Science* 122:284-285.
- Shorter, E. and Healy, D. (2007) *Shock Therapy: A History of Electroconvulsive Treatment in Mental Illness* (New Brunswick, NJ: Rutgers University Press).
- Shomrat, T. and Levin, M. (2013) An automated training paradigm reveals long-term memory in planarians and its persistence through head regeneration. *Journal of Experimental Biology* 216:3799-3810.
- Shore, P. A., Silver, S. L. and Brody, B. B. (1955) Interaction of reserpine, serotonin, and lysergic acid diethylamide in brain. *Science* 122:284-285.
- Shuttleworth, S. (1989) Psychological definition and social power: phrenology in the novels of Charlotte Brontë. In: J. Christie and S. Shuttleworth (eds.) *Nature Transfigured: Science and Literature, 1700-1900* (Manchester: Manchester University Press), pp. 121-151.
- Silver, D., Huang, A., Maddison, C. J., et al. (2016) Mastering the game of Go with deep neural networks and tree search. *Nature* 529:484-489.
- Simantov, R. and Snyder, S. H. (1976) Morphine-like peptides in mammalian brain: isolation, structure elucidation, and interactions with the opiate receptor. *Proceedings of the National Academy of Sciences USA* 73:2515-2519.
- Smalheiser, N. (2000) Walter Pitts. *Perspectives in Biology and Medicine* 43:217-226.
- Smart, J. J. C. (1959) Sensations and brain processes. *Philosophical Review* 68:141-156.
- Smee, A. (1849) *Elements of Electro-Biology or the Voltaic Mechanism of Man* (London: Longman, Brown, Green and Longmans).
- Smee, A. (1850) *Instinct and Reason Deduced from Electro-Biology* (London: Reeve, Benham and Reeve).
- Smee, A. (1851) *The Process of Thought Adapted to Words and Language, Together with a Description of the Relational and Differential Machines* (London: Longman, Brown, Green, and Longmans).
- Smith, A. P. (1978) An investigation of the mechanisms underlying nest construction in the mud wasp *Paralastor* sp. (Hymenoptera: Eumenidae). *Animal Behaviour* 26:232-240.

- Smith, C. U. M. (2001) Renatus Renatus: The Cartesian tradition in British neuroscience and the neurophilosophy of John Carew Eccles. *Brain and Cognition* 46:364-372.
- Smith, C. U. M. (2007) Brain and mind in the ‘long’ Eighteenth Century. In: H. Whitaker, C.U.M. Smith and S. Finger (eds.) *Brain, Mind and Medicine: Neuroscience in the 18th Century* (New York: Springer), pp. 15-28.
- Smith, C. U. M. (2010) Darwin’s unsolved problem: the place of consciousness in an evolutionary world. *Journal of the History of the Neurosciences* 19:105-120.
- Smith, C. U. M. (2014) The ‘hard problem’ and the Cartesian strand in British neurophysiology: Huxley, Foster, Sherrington, Eccles. In: C. U. M. Smith and H. Whitaker (eds.) *Brain, Mind and Consciousness in the History of Neuroscience* (Dordrecht: Springer), pp. 255-272.
- Smith, R. (1992a) *Inhibition: History and Meaning in the Sciences of Mind and Brain* (Berkeley: University of California Press).
- Smith, R. (1992b) The meaning of ‘inhibition’ and the discourse of order. *Science in Context* 5:237-263.
- Smith, R. (2001) Representations of mind: C. S. Sherrington and scientific opinion, c.1930–1950. *Science in Context* 14:511-539.
- Smith, S. M., Nichols, T. E., Vidaurre, D., et al. (2015) A positive-negative mode of population covariation links brain connectivity, demographics and behaviour. *Nature Neuroscience* 18:1565-1567.
- Smythies, J. (2002) The adrenochrome hypothesis of schizophrenia revisited. *Neurotoxicity Research* 4:147-150.
- Snaprud, P. (2018) The consciousness wager. *New Scientist*, 23 June 2018.
- Snyder, S. (2017) A life of neurotransmitters. *Annual Review of Pharmacology and Toxicology* 57:1-11.
- Snyder, S. (2018) The brain harbours many neurotransmitters. In: D. J. Linden (ed.) *Think Tank: Forty Neuroscientists Explore the Biological Roots of Human Experience* (London: Yale University Press), pp. 88-93.
- Sohn, P. D., Huang, C. T., Yan, R., et al. (2019) Pathogenic tau impairs axon initial segment plasticity and excitability homeostasis. *Neuron* 104:458-470.
- Soni, J. and Goodman, R. (2017) *A Mind at Play: How Claude Shannon Invented the Information Age* (London: Simon and Schuster).



- Sormaz, M., Murphy, C., Wang, H. T., et al. (2018) Default mode network can support the level of detail in experience during active task states. *Proceedings of the National Academy of Sciences USA* 115:9318-9323.
- Speak, G. (1990) An odd kind of melancholy: reflections on the glass delusion in Europe (1440-1680). *History of Psychiatry* 1:191-206.
- Sperry, R. (1961) Cerebral organisation and behaviour. *Science* 133:1749-1757.
- Sperry, R. (1966) Brain bisection and consciousness. In: J. C. Eccles (ed.) *Brain and Conscious Experience* (New York: Springer), pp. 298-313.
- Spier, L. (1928) Havasupai ethnography. *Anthropological Papers of the American Museum of Natural History* 29.
- Spinelli, D. N., Starr, A. and Barrett, T. W. (1968) Auditory specificity in unit recordings from cat's visual cortex. *Experimental Neurology* 22:75-84.
- Sporns, O. (2015) Network neuroscience. In: G. Marcus and J. Freeman (eds.) *The Future of the Brain: Essays by the World's Leading Neuroscientists* (Oxford: Princeton University Press), pp. 90-99.
- Sporns O., Tononi, G. and Kötter, R. (2005) The human connectome: A structural description of the human brain. *PLoS Computational Biology* 1:e42.
- Spurzheim, J. G. (1815) *The Physiognomical System of Drs. Gall and Spurzheim* (London: Baldwin, Cradock, and Joy).
- Stachenfeld, K. L., Botvinick, M. M. and Gershman, S. J. (2017) The hippocampus as a predictive map. *Nature Neuroscience* 20:1643-1653.
- Steckler, C. M., Hamlin, J. K., Miller, M. B., et al. (2017) Moral judgement by the disconnected left and right cerebral hemispheres: a split-brain investigation. *Royal Society Open Science* 4: 170172.
- Stein, D. J., Phillips, K. A., Bolton, D., et al. (2010) What is a mental/psychiatric disorder? From DSM-IV to DSM-V. *Psychological Medicine* 40:1759-1765.
- Steinke, H. (2005) *Irritating Experiments: Haller's Concept and the European Controversy on Irritability and Sensitivity, 1750-90* (Amsterdam: Rodopi).
- Steinmetz, N. A., Zátka-Haas, P., Carandini, M. and Harris, K. D. (2019) Distributed coding of choice, action and engagement across the mouse brain. *Nature* <https://doi.org/10.1038/s41586-019-1787-x>

- Stender, J., Gosseries, O., Bruno, M.-A., et. al. (2014) Diagnostic precision of PET imaging and functional MRI in disorders of consciousness: a clinical validation study. *The Lancet* 384:514-522.
- Steno, N. (1669) *Discours de Monsieur Stenon, sur l'Anatomie du Cerveau* (Paris: de Ninville).
- Steno, N. (1965) *Nicolaus Steno's Lecture on the Anatomy of the Brain* (Copenhagen: Nyt Nordisk Forlag Arnold Busck).
- Sterling, P. and Laughlin, S. (2015) *Principles of Neural Design* (London: MIT Press).
- Stern, S., Kirst, C. and Bargmann, C. I. (2017) Neuromodulatory control of long-term behavioral patterns and individuality across development. *Cell* 171:1649-1662.
- Stevens, K. A. (2012) The vision of David Marr. *Perception* 41:1061-1072.
- Stewart, W. (1972) Comments on the chemistry of scotophobin. *Nature* 238:202-209.
- Stoddard, E. (1992) Julien Offray de La Mettrie, 1709-1751: A bibliographical inventory. *The Papers of the Bibliographic Society of America* 86:411-459.
- Stookey, B. (1963) Jean-Baptiste Bouillaud and Ernest Auburtin: Early studies on cerebral localization and the speech center. *Journal of the American Medical Association* 184:1024-1029.
- Storm, J. F., Boly, M., Casalim, A. G., et al. (2017) Consciousness regained: Disentangling mechanisms, brain systems, and behavioural responses. *Journal of Neuroscience* 37:10882-10893.
- Strawson, G. (2017) Consciousness never left. In: K. Almqvist and A. Haag (eds.) *The Return of Consciousness: A New Science on Old Questions* (Stockholm: Axel and Margaret Ax:son Johnson Foundation), pp. 79-92.
- Stringer, C., Pachitariu, M., Steinmetz, N., et al. (2019) Spontaneous behaviors drive multidimensional, brainwide activity. *Science* 364:eaav7893.
- Sutherland, S. (1989) *International Dictionary of Psychology* (New York: Crossroad).
- Sulzer, D. (2011) How addictive drugs disrupt presynaptic dopamine neurotransmission. *Neuron* 69:628-649.
- Swammerdam, J. (1758) *The Book of Nature* (London: Seyffert).
- Swanson, L. W. and Lichtman, J. W. (2016) From Cajal to connectome and beyond. *Annual Review of Neuroscience* 39:197-216.
- Swazey, J. P. (1969) *Reflexes and Motor Integration: Sherrington's Concept of Integrative Action* (Cambridge, Mass.: Harvard University Press).

- Swazey, J. P. (1970) Action propre and action commune: The localization of cerebral function. *Journal of the History of Biology* 3:213-234.
- Swisher, C. N. (1967) The William Osler Medal Essay: Charles Darwin on the origins of behavior. *Bulletin of the History of Medicine* 41:24-43.
- Takemura, S.-Y., Nern, A., Chklovskii, D. B., et al. (2017) The comprehensive connectome of a neural substrate for ‘ON’ motion detection in *Drosophila*. *eLife* 6:e24394.
- Tanaka, K. Z., He, H., Tomar, A., et al. (2018) The hippocampal engram maps experience but not place. *Science* 361:392-397.
- Tasic, B., Yao, Z., Graybuck, L. T., et al. (2018) Shared and distinct transcriptomic cell types across neocortical areas. *Nature* 563:72-78.
- Taylor, C. S. R. and Gross, C. G. (2003) Twitches versus movements: A story of motor cortex. *The Neuroscientist* 9:332-342.
- Temkin, O. (1936) A Dissertation on the Sensible and Irritable Parts of Animals, by Albrecht von Haller, with an Introduction. *Bulletin of the History of Medicine* 4:651-699.
- Temkin, O. (1971) *The Falling Sickness: A History of Epilepsy from the Greeks to the Beginnings of Modern Neurology* (Baltimore: Johns Hopkins Press).
- Ter-Pogossian, M. M. (1992) The origins of positron emission tomography. *Seminars in Nuclear Medicine* 22:140-149.
- Teyler, T. J. and DiScenna, P. (1986) The hippocampal memory indexing theory. *Behavioral Neuroscience* 100:147-154.
- The PsychENCODE Consortium (2018) Revealing the brain’s molecular architecture. *Science* 362:1262-1263.
- Thompson, H. S. (1972) *Fear and Loathing in Las Vegas: A Savage Journey to the Heart of the American Dream* (London: Paladin).
- Thomson, A. (ed.) (1996) *La Mettrie: Machine Man and Other Writings* (Cambridge: Cambridge University Press).
- Thomson, A. (2010) Animals, humans, machines and thinking matter, 1690-1707. *Early Science and Medicine* 15:3-37.
- Thomson, S. and Smith, H. H. (1853) *A Dictionary of Domestic Medicine and Household Surgery* (Philadelphia: Lippincott, Grambo).
- Thum, A. and Gerber, B. (2019) Connectomics and function of a memory network: the mushroom body of larval *Drosophila*. *Current Opinion in Neurobiology* 54:146-154.

- Tiesinga, P., Bakker, R., Hill, S. and Bjaalie, J. G. (2015) Feeding the human brain model. *Current Opinion in Neurobiology* 32:107-114.
- Titley, H. K., Brunel, B. and Hansel, C. (2017) Toward a neurocentric view of learning. *Neuron* 95:19-32.
- Todes, D. (2014) *Ivan Pavlov: A Russian Life in Science* (New York: Oxford University Press).
- Toga, A. W. and Thompson, P. M. (2003) Mapping brain asymmetry. *Nature Reviews Neuroscience* 4:37-48.
- Tolman, E. C. (1949) Cognitive maps in rats and men. *Psychological Review* 55:189-208.
- Tonegawa, S., Morrissey, M. D. and Kitamura, T. (2018) The role of engram cells in the systems consolidation of memory. *Nature Reviews Neuroscience* 19:485-498.
- Tononi, G. (2008) Consciousness as integrated information: a provisional manifesto. *Biological Bulletin* 215:216-242.
- Tononi, G. and Koch, C. (2015) Consciousness: here, there and everywhere? *Philosophical Transactions of the Royal Society B* 370:20140167.
- Tononi, G., Boly, M., Massimini, M. and Koch, C. (2016) Integrated information theory: from consciousness to its physical substrate. *Nature Reviews Neuroscience* 17:450-461.
- Torlais, J. (1963) Qui a inventé la bouteille de Leyde? *Revue d'histoire des sciences et de leurs applications* 16:211-219.
- Tosches, M. A., Yamawaki, T. M., Naumann, R. K., et al. (2018) Evolution of pallium, hippocampus, and cortical cell types revealed by single-cell transcriptomics in reptiles. *Science* 360:881-888.
- Travis, G. (1981) Replicating replication? Aspects of the social construction of learning in planarian worms. *Social Studies of Science* 11:11-32.
- Treisman, A. M. and Gelade, G. (1980) A feature-integration theory of attention. *Cognitive Psychology* 12:97-136.
- Turing, A. M. (1937) On computable numbers, with an application to the Entscheidungsproblem. *Proceedings of the London Mathematical Society* 42:230-265.
- Turing, A. M. (1950) Computing machinery and intelligence. *Mind* 59:433-460.
- Turkheimer, F. E. (2019) Conflicting emergences. Weak vs. strong emergence for the modelling of brain function. *Neuroscience and Biobehavioral Reviews* 99:3-10.
- Turrigiano, G., Abbott, L. F. and Marder, E. (1994) Activity-dependent changes in the intrinsic properties of cultured neurons. *Science* 264:974-977.

- Twarog, B. N. and Page, I. H. (1953) Serotonin content of some mammalian tissues and urine and a method for its determination. *American Journal of Physiology* 175:157-161.
- Tyč-Dumont, S., Batini, C. and Horcholle-Bossavit, G. (2012) An old hypothesis and new tools: Alfred Fessard's approach to the problem of consciousness. *Journal of the History of the Neurosciences* 21:170-188.
- Tyndall, J. (1874) *John Tyndall's Address Delivered Before the British Association Assembled at Belfast, With Additions* (London: Longmans, Green).
- Tyndall, J. (1875) Reply to the critics of the Belfast Address. *Popular Science Monthly*, February 1875, pp. 422-440.
- Uexküll, J. von (1926) *Theoretical Biology* (London: Kegan Paul, Trench, Trubner).
- Ullman, S. (2019) Using neuroscience to develop artificial intelligence. *Science* 363:692-693.
- Ungar, G., Desiderio, D. M. and Parr, W. (1972) Isolation, identification and synthesis of a specific-behaviour-inducing brain peptide. *Nature* 238:198-202.
- Uttal, W. R. (2001) *The New Phrenology: The Limits of Localizing Cognitive Processes in the Brain* (Cambridge, MA: MIT Press).
- Uzgalis, W. (2008) Selections from the Clarke-Collins correspondence. In: J. Perry (ed.) *Personal Identity* (London: University of California Press), pp. 283-314.
- Vaidya, A. R. and Fellows, L. K. (2015) Testing necessary regional frontal contributions to value assessment and fixation-based updating. *Nature Communications* 6:10120.
- Valenstein, E. S. (2005) *The War of the Soups and the Sparks: The Discovery of Neurotransmitters and the Dispute Over How Nerves Communicate* (New York: Columbia University Press).
- Valli, E. (1793) *Experiments on Animal Electricity, With their Application to Physiology* (London: Johnson).
- van der Eijk, P. J. (2008) The art of medicine: Nemesius of Emesa and early brain mapping. *Lancet* 372:440-441.
- van Hemmen, L. and Sejowski, T. (2006) *23 Problems in Systems Neuroscience* (Oxford: Oxford University Press).
- van Praag, H. M. and de Haan, S. (1979) Central serotonin metabolism and frequency of depression. *Psychiatry Research* 1:219-224.
- van Strien, M. (2015) Vital instability: life and free will in physics and physiology, 1860-1880. *Annals of Science* 72:381-400.

- van Vugt, B., Dagnino, B., Vartak, D., et al. (2018) The threshold for conscious report: signal loss and response bias in visual and frontal cortex. *Science* 360:537-542.
- Vander Weele, C. M., Siciliano, C. A., Matthews, G. A., et al. (2018) Dopamine enhances signal-to-noise ratio in cortical-brainstem encoding of aversive stimuli. *Nature* 563:397-401.
- Vargas-Irwin, C. E., Franquemont, L., Black, M. J. and Donoghue, J. P. (2015) Linking objects to actions: Encoding of target object and grasping strategy in primate ventral premotor cortex. *Journal of Neuroscience* 35:10888-10897.
- Vartanian, A. (1960) *La Mettrie's L'Homme Machine: A Study in the Origins of an Idea* (Princeton: Princeton University Press).
- Velasco, C., Kedaigle, A. J., Simmons, S. K., et al. (2019) Individual brain organoids reproducibly form cell diversity of the human cerebral cortex. *Nature* 570:523-527.
- Vetere, G., Tran, L. M., Moberg, S., et al. (2019) Memory formation in the absence of experience. *Nature Neuroscience* 22:933-940.
- Vidal, F. and Ortega, F. (2017) *Being Brains: Making the Cerebral Subject* (New York: Fordham University Press).
- Vladimirov, N., Wang, C., Höckendorf, B., et al. (2018) Brain-wide circuit interrogation at the cellular level guided by online analysis of neuronal function. *Nature Methods* 15:1117-1125.
- Vogt, C. (1855) *Köhlerglaube und Wissenschaft: eine Streitschrift gegen Hofrath Rudolph Wagner in Göttingen* (Giessen: Rider).
- Volkow, N. D., Koob, G. F. and McLella, A. T. (2016) Neurobiologic advances from the brain disease model of addiction. *New England Journal of Medicine* 374:363-371.
- Volta, A. (1800) On the electricity excited by the mere contact of conducting substances of different kinds. *Philosophical Transactions of the Royal Society of London* 90:403-431.
- Volta, A. (1816) *Collezione dell' opere del cavaliere Conte Alessandro Volta, Vol 2, part 1* (Firenze: Piatti).
- Volz, L. J. and Gazzaniga, M. S. (2017) Interaction in isolation: 50 years of insights from split-brain research. *Brain* 140:2051-2060.
- Volz, L. J., Hillyard, S. A., Miller, M. B. and Gazzaniga, M. S. (2018) Unifying control over the body: consciousness and cross-cueing in split-brain patients. *Brain* 141:e15.
- von Neumann, J. (1951) The general and logical theory of automata. In: L. A. Jeffress (ed.) *Cerebral Mechanisms in Behavior: The Hixon Symposium* (London: Hafner), pp. 1-31.

- von Neumann, J. (1958) *The Computer and the Brain* (New Haven: Yale University Press).
- von Neumann, J. (1993) First draft of a report on the EDVAC. *IEEE Annals of the History of Computing* 15:27-43.
- von Staden, E. (1989) *Herophilus: The Art of Medicine in Early Alexandria* (Cambridge: Cambridge University Press).
- Vosshall, L. B. (2007) Into the mind of a fly. *Nature* 450:193-197.
- Vul, E., Harris, C., Winkielman, P. and Pashler, H. (2009) Puzzlingly high correlations in fMRI studies of emotion, personality, and social cognition. *Perspectives in Psychological Science* 4:274-290.
- Wallace, A. R. (1871) *Contributions to the Theory of Natural Selection. A Series of Essays* (London: MacMillan).
- Wallace, A. R. (1874) Automatism of animals. *Nature* 6:502-503.
- Wallis Budge, E. A. (1972) *From Fetish to God in Ancient Egypt* (New York: Blom).
- Wang, X., Allen, W. E., Wright, M. A., et al. (2018) Three-dimensional intact-tissue sequencing of single-cell transcriptional states. *Science* 361:eaat5691.
- Watson, J. B. (1913) Psychology as the behaviorist views it. *Psychological Review* 20:158-177.
- Waydo, S., Kraskov, A., Quiñero, R., et al. (2006) Sparse representation in the human medial temporal lobe. *Journal of Neuroscience* 26:10232-10234.
- Webb, B. (2019) The internal maps of insects. *Journal of Experimental Biology* 222:jeb188094.
- Weisberg, M. (2014) Remeasuring man. *Evolution & Development* 16:166-178.
- Weiskrantz, L., Warrington, E. K., Sanders, M. D. and Marshall, J. (1974) Visual capacity in the hemianopic field following a restricted occipital ablation. *Brain* 97:709-728.
- Weiss, T., Soroka, T., Gorodisky L., et al. (2020) Human olfaction without apparent olfactory bulbs. *Neuron* 105:1-11.
- Wellman, K. (1992) *La Mettrie: Medicine, Philosophy and Enlightenment* (London: Duke University Press).
- Westphal, J. (2016) *The Mind-Body Problem* (Cambridge, MA: MIT Press).
- Wetterhan, I. D. (1874) Automatism of animals. *Nature* 6:438.
- Whewell, W. (1834) On the Connexion of the Physical Sciences, by Mrs Somerville. *The Quarterly Review* 51:54-68.
- Whitaker, K. (2004) *Mad Madge: Margaret Cavendish, Duchess of Newcastle, Royalist, Writer and Romantic* (London: Vintage).

- White, J. G. (2013) Getting into the mind of a worm – a personal view (June 25, 2013). In: The *C. elegans* Research Community (eds.) *WormBook* [http://www.wormbook.org/chapters/www\\_mindofworm/mindofworm.html](http://www.wormbook.org/chapters/www_mindofworm/mindofworm.html)
- White, J. G., Southgate, E., Thomson, J. N. and Brenner, S. (1986) The structure of the nervous system of the nematode *Caenorhabditis elegans*. *Philosophical Transactions of the Royal Society of London B Biological Sciences* 314:1-340.
- Whitfield, J., Pako, W. and Alpers, M. (2015) Personnalité métaphysique et rites traditionnels mortuaires Sud Fore. *Le Journal de la Société des Océanistes* 141:303-321.
- Whytt, R. (1751) *An Essay on the Vital and Other Involuntary Motions of Animals* (Edinburgh: Hamilton, Balfour and Neill).
- Wickens, A. P. (2015) *A History of the Brain: From Stone Age Surgery to Modern Neuroscience* (Hove: Psychology Press).
- Wiener, N. (1948) *Cybernetics: or, Control and Communication in the Animal and the Machine* (New York: Technology Press).
- Wilkins, R. H. (1963) Neurosurgical Classic. XI. *Journal of Neurosurgery* 20:904-916.
- Willis, T. (1684) *Dr Willis's Practice of Physick, Being the Whole Works of that Renowned and Famous Physician* (London: Dring, Harper and Lee).
- Wilson, D. (1986) Scotophobin resurrected as a neuropeptide. *Nature* 320:313-314.
- Wilson, M. and Bower, J. M. (1992) Simulating cerebral cortical networks: oscillations and temporal interactions in a computer simulation of piriform (olfactory) cortex. *Journal of Neurophysiology* 67:981-995.
- Wilson, M. A. and McNaughton, B. L. (1994) Reactivation of hippocampal ensemble memories during sleep. *Science* 265:676-679.
- Winnubst, J., Bas, E., Ferreira, T. A., et al. (2019) Reconstruction of 1,000 projection neurons reveals new cell types and organization of long-range connectivity in the mouse brain. *Cell* 179:268-281.
- Wolff, S. B. E. and Ölveczky, B. P. (2018) The promise and perils of causal circuit manipulations. *Current Opinion in Neurobiology* 49:84-94.
- Yartsev, M. M. and Ulanovsky, N. (2013) Representation of three-dimensional space in the hippocampus of flying bats. *Science* 340:367-372.
- Yolton, J. W. (1983) *Thinking Matter: Materialism in Eighteenth-Century Britain* (Oxford: Blackwell).



- Young, R. M. (1990) *Mind, Brain and Adaptation in the Nineteenth Century: Cerebral Localization and its Biological Context from Gall to Ferrier* (Oxford: Oxford University Press).
- Young, J. Z. (1951) *Doubt and Certainty in Science: A Biologist's Reflection on the Brain* (Oxford: Clarendon).
- Yu, F., Jiang, Q.-J., Sun, X.-Y. and Zhang, R.-W. (2015) A new case of complete primary cerebellar agenesis: clinical and imaging findings in a living patient. *Brain* 138:e353.
- Yuste, R. (2015) From the neuron doctrine to neural networks. *Nature Reviews Neuroscience* 16:487-497.
- Zangwill, O. L. (1980) Kenneth Craik: The man and his work. *British Journal of Psychology* 71:1-16.
- Zhu, S., Noviello, C. M., Teng, J., et al. (2018) Structure of a human synaptic GABA<sub>A</sub> receptor. *Nature* 559:67-72.
- Zimmer, C. (2004) *Soul Made Flesh: Thomas Willis, the English Civil War and the Mapping of the Mind* (London: Heinemann).