

Friday 1 June 2001 9 to 12

HISTORY AND PHILOSOPHY OF SCIENCE (1)

Classical Traditions in the Sciences

Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.

SECTION A

- 1 Ancient, medieval and early modern discussions of learning often distinguished *ars* from *scientia*. How well do these notions correspond to the modern terms 'art' and 'science'?
- 2 Discuss the roles of **either** books **or** instruments in the sciences from the classical to the early-modern period.
- 3 Was there a scientific revolution before 1600?

SECTION B

- 4 **Either** (a) How important is it to be aware of where our information concerning ancient thinkers comes from? Give specific examples.
Or (b) How do you account for the similarities and the differences between ancient Greek and Chinese studies of the heavens?
- 5 **Either** (a) Discuss Aristotle's theory of demonstration. Was it useful to him in his zoological investigations?
Or (b) Was Greek mathematics 'pure' or 'applied'? Discuss with particular reference to Archimedes.
- 6 **Either** (a) Discuss the significance of some of the principal doctrines of *falsafa* (philosophy) and *kalam* (dialectical theology).
Or (b) What did heresy and philosophy have to do with each other in the thirteenth century?
- 7 What was the difference between knowledge which came in the form of books and knowledge which came in the form of dreams? Discuss with reference to astrological and alchemical practices before 1600.

8 **Either** (a) Discuss the range of conceptual and material models of the cosmos available to early modern astronomers.

Or (b) 'As to the title of my position, I desire that in addition to the title of "mathematician" His Highness [the Grand Duke of Florence, Cosmo de' Medici] will annex that of "philosopher"; for I may claim to have studied more years in philosophy than months in pure mathematics' (GALILEO, letter to Belisario Vinta, 1610). What is the wider significance of Galileo's request?

9. How important were doctrines of method for the practice of natural philosophy in pre-modern Europe?

END OF PAPER

NATURAL SCIENCES TRIPOS Part II

Saturday 2 June 2001 1.30 to 4.30

HISTORY AND PHILOSOPHY OF SCIENCE (2)

Natural and Moral Philosophies

Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.

SECTION A

- 1 How and why did the place of natural philosophy in university curricula change between 1600 and 1800?
- 2 What were the meanings of 'philosophy' between 1600 and 1800?
- 3 Where were natural history and natural philosophy practised together in the eighteenth century, and why?

SECTION B

- 4 **Either** (a) Account for the success of the Tycho system.
Or (b) 'One good instrument is of as much worth as a hundred indifferent ones' (JOHN FLAMSTEED). Discuss the development of the idea of instrumental accuracy during the seventeenth century.
- 5 Compare and contrast the roles played by Francis Bacon **and** by Isaac Newton in the promotion of natural philosophy before 1800.
- 6 **Either** (a) What were the consequences for natural philosophy of the heretical religious beliefs of some of its practitioners?
Or (b) 'Astrologers write books, alchemists make gold and magicians speak with angels.' Does this description apply to seventeenth-century England?
- 7 **Either** (a) What roles do Locke **and/or** Leibniz attribute to the mind and to experience in the construction of knowledge?
Or (b) What is the significance of Hume's copy principle?
- 8 **Either** (a) What were the roles of sex in eighteenth-century natural history?
Or (b) How did international exploration affect natural history **and** natural philosophy between 1600 and 1800?

9 **Either** (a) 'As little as the man who admits colours not to be properties of the object in itself, but only to be modifications of the sense of sight, should be called an idealist, so little can my doctrine be named idealistic merely because I find that more, nay *all the properties which constitute the intuition of a body belong merely to its appearance*. The existence of the thing that appears is thereby not destroyed, as in genuine idealism, but it is only shown that we cannot possibly know it by the senses as it is in itself' (IMMANUEL KANT). Discuss with reference to Berkeley **and/or** Kant.

Or (b) How does the study of living beings differ from that of inanimate bodies according to Kant?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (3)

Science, Industry and Empire

Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.

SECTION A

1 ‘The Anglo-Saxon peoples have in modern days, a genius for nonexpertness in science... Were we not constantly nursed at the breast of Germany, both England and America would long since have starved to death scientifically’ (GEORGE M. BEARD, 1882). Was that fair comment?

2 To what extent is the history of sciences since 1800 the history of the growth of the modern state?

3 ‘Even if all the countries of the earth were isolated from each other, the development of physics would everywhere take the same course’ (MAX PLANCK, 1931). Do you agree?

SECTION B

4 **Either** (a) To what extent is the history of evolutionary theory in Victorian Britain an episode in the history of empire?

Or (b) Did the *Origin of Species* create a crisis, or resolve one?

5 **Either** (a) ‘My single true purpose is to investigate the confluence and interweaving of all physical forces’ (ALEXANDER VON HUMBOLT). Discuss.

Or (b) To what extent were the changes in Victorian astronomical theories connected with changes in astronomical instrumentation?

6 **Either** (a) What role did exhibitions play in the sciences during the second half of the nineteenth century?

Or (b) ‘Portrait-painting subserves. It teaches beneficial lessons. It calls to mind the example of great men, when they are fled beyond the reach of observation’ (JOHN EVANS, *Juvenile Pieces: Designed for the Youth of Both Sexes*, 1797). What lessons can historians of post-1800 science learn from studying portraits?

7 'Pure science is irresponsible' (HERBERT MEHRTENS, 1994). With reference **either** to the uses of science in the First World War **or** under National Socialism, how could purity be considered irresponsible?

8 **Either** (a) 'The steam engine owes more to science than science to the steam engine.' Does the history of Victorian physics confirm this view?

Or (b) Compare the roles of mathematical training and laboratory training in the education of Victorian physicists.

9 **Either** (a) Why after 1905 was Einstein's theory of 'special relativity' seen to supersede Lorentz's 'compensatory theory'?

Or (b) 'Every experiment designed to detect the aether has produced a null result'. Discuss.

END OF PAPER

NATURAL SCIENCES TRIPOS Part II

Thursday 31 May 2001 1.30 to 4.30

HISTORY AND PHILOSOPHY OF SCIENCE (4)

Metaphysics, Epistemology and the Sciences

*Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.*

SECTION A

- 1 Is the philosophy of science just a more abstract form of science?
- 2 Is a sociological approach in the philosophy of science compatible with scientific realism?
- 3 What is the philosophy of science for?

SECTION B

- 4 **Either** (a) Why did the programme of logical positivism collapse?
Or (b) What are the functions of paradigmatic cases in the sciences?
- 5 **Either** (a) What does the 'grandfather paradox' reveal about the possibility of time travel?
Or (b) Assess the 'selected effects' account of biological functions.
- 6 **Either** (a) Entity realism and structural realism provide two possible responses to the pessimistic induction on past scientific theories. Assess the prospects of one of them.
Or (b) Does reliabilism help to solve the problem of induction?
- 7 Is testimony a generative source of knowledge?
- 8 **Either** (a) Do laws of nature describe how things *must* be?
Or (b) What distinguishes explanatory from unexplanatory causes?
- 9 Does testing a scientific hypothesis consist in determining the truth-value of part of its content?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (5)

Science and Technology Studies

*Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.*

SECTION A

- 1 Can there be social explanations of the content of scientific knowledge?
- 2 'Scientific knowledge is political through and through.' Discuss.
- 3 'Sociology of science is the way in which science knows itself. Hence there is nothing left for a philosophy of science to do.' Discuss.

SECTION B

- 4 **Either** (a) 'Feminist history of science uninformed by feminist epistemology is blind; feminist epistemology uninformed by feminist history of science is empty.' Discuss.
Or (b) "'Sex" relates to "gender" as biology relates to sociology.' Discuss.
- 5 **Either** (a) 'Medical men have used reproductive technologies to take control of women's fertility.' Critically assess this claim, referring to specific examples in your answer.
Or (b) Why have most contraceptives been made for women?
- 6 Why has the relationship between science and war only recently attracted the attention of historians?
- 7 **Either** (a) Do the places where scientists work affect the knowledge scientists make?
Or (b) Can computers make scientific discoveries?
- 8 Is science a tool for economic oppression?
- 9 'Popularizations and scientific articles present two views of what a scientist does, two views that are incompatible but that both play a part in creating the cultural authority of science' (G. MYERS). Do you agree?

END OF PAPER

HISTORY AND PHILOSOPHY OF SCIENCE (6)

History and Philosophy of Mind

Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.

SECTION A

- 1 'Psychoanalysis and the natural-scientific study of the brain have made philosophy of mind obsolete.' Discuss.
- 2 'The unconscious is at the heart of every study of the mind.' Discuss.
- 3 Should inquiry into the mind take different forms from inquiry into the body?

SECTION B

- 4 **Either** (a) 'Sexual love is undoubtedly one of the chief things in life... Apart from a few queer fanatics, all the world knows this and conducts its life accordingly; science alone is too delicate to admit it' (FREUD, *Observations on Transference-Love*, 1915). Did psychoanalysis manage to persuade 'science' of the importance of sexuality?
Or (b) 'Post-religious moral system combined with a scientific procedure for medical cures – what better recipe for success could there be?' Is this an accurate portrayal of psychoanalysis and its history?
- 5 **Either** (a) Is phenomenology a natural continuation of Cartesianism?
Or (b) Was Husserl's attempt to analyse intersubjectivity a failure?
- 6 **Either** (a) Did Freud's conception of the unconscious mind introduce anything new into psychology?
Or (b) Must unconscious mental states be accessible to consciousness – at least in principle?
- 7 **Either** (a) Discuss the role of measurement, observation and experiment in twentieth-century British psychology.
Or (b) The hereditarian assumptions of most psychologists in Britain before 1914 became irrelevant to the majority of British psychologists and their subjects of study after 1945. Discuss.

8 **Either** (a) What grounds are there for thinking that mental states are anything other than physical states of the brain?

Or (b) What difficulties are there in supposing that general concepts have determinate content?

9 Is the chemical brain the home of mental disorder?

END OF PAPER

NATURAL SCIENCES TRIPOS Part II
MEDICAL AND VETERINARY SCIENCES TRIPOS Part II

Saturday 2 June 2001

9 to 12

HISTORY AND PHILOSOPHY OF SCIENCE (7)
SPECIAL SUBJECT HISTORY OF MEDICINE (1)

History of Medicine from Antiquity to the Enlightenment

Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.

SECTION A

- 1 'Physicians walk a fine line between expertise and common sense, between innovation and tradition.' Discuss with reference to the period before 1750.
- 2 'The Black Death was the most important event in the history of western medicine in the period before 1700.' Do you agree?
- 3 What happened to medicine in the 'Scientific Revolution'?

SECTION B

- 4 **Either** (a) Who in Graeco-Roman antiquity thought of doctors as experts and why?
Or (b) What were the similarities and differences between Greek and Roman care for the wounded?
- 5 Did women have any say in their own medical treatment? Answer with reference to **one** of the following periods: classical antiquity; medieval Europe; early modern Europe.
- 6 **Either** (a) 'Early modern healers and their clients resorted to a demonic explanation when they could account for an affliction in no other way.' Is this true?
Or (b) 'Relics cured madness and surgery cured the stone.' Discuss.
- 7 'Between 1300 and 1800 the status of medical knowledge and of medical practitioners could be promoted and also undermined in the courtroom.' Discuss with reference to **either** the role of medical practitioners as expert witnesses, **or** conflicts between patients and practitioners.
- 8 **Either** (a) 'The theory of the medieval doctors was absurd and their practice bizarre; yet often they were successful.' Discuss.

Or (b) 'Advances in anatomy were entirely irrelevant to the practice of everyday medicine in early modern Europe.' Do you agree?

- 9 **Either** (a) Were medieval hospitals places where people went to die?
Or (b) Was a medical practitioner who could not read Latin trustworthy?

END OF PAPER

NATURAL SCIENCES TRIPOS Part II
MEDICAL AND VETERINARY SCIENCES TRIPOS Part II

Thursday 31 May 2001

9 to 12

HISTORY AND PHILOSOPHY OF SCIENCE (8)
SPECIAL SUBJECT HISTORY OF MEDICINE (2)

Modern Medicine and Biomedical Sciences

*Answer **three** questions: answer **one** question chosen from **Section A** and **two** questions chosen from **Section B**.*

SECTION A

- 1 Would it be possible to write the history of modern medicine leaving out the 'great doctors'?
- 2 'Illness is a social phenomenon, but disease is a biological one.' Assess this claim in the light of your understanding of the history of disease between 1750 and 2000.
- 3 'Sick people are best helped by treating them primarily as problems in applied science.' Describe and explain opposition to this view in the nineteenth and twentieth centuries.

SECTION B

- 4 'Reports of the "birth of the clinic" in the post-Revolutionary Paris Clinical School are greatly exaggerated, and the idea that this was the "birth" of modern medicine is, to say the least, incomplete.' Do you agree?
- 5 'It is impossible to write about the body without also writing about power' (DORINDA OUTRAM). Is this the case for the history of anatomising in the period 1780-1830?
- 6 'The history of nineteenth-century surgery is a history, above all, of technological advance.' Is it?
- 7 **Either** (a) 'Eugenics was about state interference in reproductive behaviour, whereas medical genetics preserves individual choice.' Discuss.
Or (b) How and why did penicillin become paradigmatic for post-war medicine?
- 8 'The atlas aims to make nature safe for science' (L. DASTON AND P. GALISON, 1992). How, since the end of the eighteenth century, have embryological

atlases been produced, and with what aims? What difference have they made to pregnant women?

9 **Either** (a) What are the differences, from historical and conceptual points of view, between physical symptoms and mental symptoms?

Or (b) 'Psychiatrists are secondary in importance to their technologies: the asylum, the couch and the pill.' Does the history of psychiatry confirm this view?

END OF PAPER