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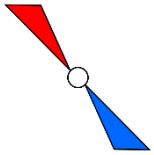

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dealing with insect pests in their various colonies. The system of deliberate transplantation centred on Kew resulted in major changes in the crops grown in many countries. The availability of cheap quinine, which opened up many tropical areas to European penetration, came about when Clements Markham successfully transplanted the cinchona plant from South America to India via Kew in 1859-62. The Indian plantations that were soon established produced a vast increase in the supply of quinine, replacing the declining supply from naturally grown South American cinchona bark. Rubber trees were smuggled out of Brazil despite a government ban on export and used to create new sources of supply in Ceylon and the Malay peninsula. Tobacco, cacao plants (for chocolate) and tea were other plants that were established as cash crops in new parts of the world as a result of this programme. Botanists also influenced people's lives in other ways. The Canadian naturalist John Macoun explored the prairies in the 1850s and described them as ideal agricultural country. But Macoun was there during an unusually wet season, and when the first white settlers arrived they faced immense hardship until they developed techniques for coping with this semi-arid environment. There was less interest in transferring exotic animal species around the world. Europeans tended to export their own familiar animals, sometimes deliberately as in the case of cattle and horses, but often accidentally and with disastrous consequences. The introduction of the rabbit into Australia offered a classic illustration of how a species could take over a new environment in which there were no natural predators. But samples of the new species discovered in colonized territories were routinely brought back to be described, classified and perhaps displayed in the great European museums and zoological gardens. These institutions played a role as imperial symbols, allowing Europeans to visualize the extent of their world-wide conquests through the display of exotic species. Considerable excitement was generated when spectacular new species were brought home from newly explored parts of the world, as when Paul du Chaillu displayed stuffed gorillas shot during his explorations of central Africa (1855-9). The anatomist Richard Owen, now director of **the Natural History Museum** in London, lectured on the gorilla to large audiences. He soon came into conflict with Thomas Henry Huxley (182595) - known as 'Darwin's bulldog' - over the question of humankind's relationship to the great apes. Du Chaillu's discoveries did much to focus public attention on the implications of Darwin's theory, and may have helped to generate alarm over the prospect that the human race could be related to a creature whose ferocious nature had been deliberately exaggerated by its discoverer. **Museums** also helped to focus attention on the time dimension in natural history by displaying

spectacular collections of fossils

. Once such displays were interpreted in terms of evolution, the general public could hardly fail to accept the message of the new science. The late nineteenth century saw

	a major expansion of **paleontology** as new areas were opened up for exploration. The new discoveries not only provided more detailed evidence for the development of life on earth, but also highlighted the exotic nature of **the earth's earlier inhabitants**. Great dinosaurs were excavated from the American west while it was still 'wild' - early **fossil-hunters** had to contend with hostile Indians and sometimes came to blows over possession of the richest sites. When displayed in the great cities of the east, and in the capitals of Europe, **the larger dinosaurs** seemed to confirm the superiority of modern industrial society by showing how the world had been conquered both in space and time. As symbols of dominance, these displays demanded a spectacular setting, and soon every great city of the industrialized world possessed a museum whose cathedral-like setting helped to confirm the role that science had usurped as the source of moral authority in the modern world. **The Natural History Museum** in London moved into its present building in the 1880s, and a statue of Owen still greets visitors as they enter its main hall containing **the great dinosaur skeletons**. Many of the American museums were founded by capitalists seeking to proclaim both their own success and the power of industrial society. If the London museum was a product of imperial self-confidence, the **American Museum of Natural History** in New York celebrated the growing influence of the captains of industry in a similarly grandiose fashion. The Professionalization of Biology The modern scientific profession was very much a product of the late nineteenth century. Now at last governments and industries were persuaded (reluctantly, in some cases) that investment in science was a vital part of a nation's economy. France and Germany already had museums and universities with a substantial research function. Men such as Huxley and Hooker now played a significant role in the creation of the British scientific establishment by building up a system of government support for research and education. The process did not always run smoothly. As late as 1871 Hooker's position at Kew was threatened by an unsympathetic government official who wished to dismantle the garden's scientific function, and the decision was reversed only when pressure was applied by Huxley, Darwin and other eminent scientists. On the other hand, Huxley at first opposed the plans for a new Natural History Museum because of his personal hostility to Owen. On the whole, however, this period saw a steady expansion in support for science, and the emergence of the modern system of scientific education in the English-speaking world. The concept