that had some obvious external manifestation are strikingly rational and thorough, but although rationalism and experience were enabling scientific medicine to free itself from the shackles of magic, the latter nevertheless continued, and it is by no means extinct to-day. Even when he treated disease by rational therapeutic methods, the physician could never forget that his art originated in various attempts to coax, charm, or forcibly expel the demon of disease from its involuntary host.

It is the fashion amongst students of medical history to despise Egyptian medicine as fantastic and absurd. It must not be forgotten, however, that through the thirty centuries or so that preceded the birth of scientific thought in Greece, Egypt had painfully laid the foundation upon which later investigators were to build. Throughout the jumble of magic and sorcery that plays so large a part in Egyptian medicine, a careful study of the texts reveals a modicum of correctly observed truth—the very foundations of medical science. If Egypt cannot compete with Greece in scientific knowledge and thought, she at least inaugurated what others have developed, and the time-honoured custom of mummification familiarised the popular mind for thirty centuries with the idea of cutting the dead human body, and the Greek anatomists in the time of the Ptolemies were able to begin, in Egypt, the systematic dissection of the human body, which popular prejudice forbade in all other parts of the world. Without anatomy, the scientific practice of medicine could never have been possible: civilisation and humanity owe an enormous debt to Egypt.

Origin of the Bird Fauna of the Arctic.

AN attempt to solve the problem of the origin of the bird fauna of the arctic has recently been made by Prof. A. Tougarinov ("The origin of Arctic Fauna", *Priroda*, No. 7-8, 654-680, Leningrad, 1929).

The total number of species nesting in the arctic zone is about 180, or 240 if one includes the sub-species. These can be divided into the following zoogeographical groups:

(1) The group with circumpolar distribution, comprising 26 purely arctic species, which do not nest farther south. It is interesting to note that there exists a distinct systematic affinity between some of these species and those inhabiting more southerly regions. Thus, the arctic *Buteo lagopus* is closely related to *B. hemilasius*, which inhabits Central Asia and is not found farther north than the southern regions of the Siberian steppes. Many other such examples might be quoted.

(2) The Atlantic group, consisting of 16 species, out of which 7 are truly arctic, nesting on the coast-line of the Atlantic ocean. These species are found throughout the European coasts of the Atlantic, up to the regions which are subject to the influence of the Gulf Stream, Franz-Joseph Land, Spitsbergen, Iceland, Greenland, as well as the eastern coasts of arctic America.

(3) The European-Siberian group consisting of 15 truly arctic species, which are found throughout the tundras of Europe and western Siberia so far east as Taimyr. As a general rule, these species hibernate in the Mediterranean region, not farther east than the Aral Sea.

(4) The Eastern-Siberian group, which consists of 23 arctic species and is spread throughout the tundras and islands of the Polar Sea, from the Taimyr Peninsula up to the Kalyma River. Here again there is an affinity with more southerly Asiatic species. Thus, *Leucosticte brunneinucha* living in the tundras of Yakutia belongs to the genus well represented in the mountainous regions of Central Asia. Again, *Sarcogeranus leucogeranus* found in the tundras of Yana and Kalyma is sporadically distributed throughout the South Siberian, Mongolian and Kirgiz steppes. Even more striking is the close systematic affinity between the arctic species belonging to the East Siberian group and those inhabiting the nearctic, for out of their total number of 23, 11 species are found in North America.

(5) The Tchukotsk Peninsula group, possessing a rich and varied arctic fauna. There are 34 truly arctic species alone, out of which 12 are found also in Alaska, and another 15 in Alaska and America. The bird fauna of the Tchukotsk Peninsula bears a close resemblance to that of the neighbouring regions of America. On the other hand, one is struck by the dissimilarity between the arctic bird faunas of eastern Siberia and that found west of Chaunsk Bay; however, it is somewhat difficult to decide whether the Tchukotsk group belongs to the palæarctic or nearctic zoogeographical region.

(6) The bird fauna of the coast-line and the islands of the Bering Sea deserves to be placed in a separate group. It is distinguished by the presence of numerous representatives of the family *Alcidæ*, eight species of which are found in that region. Another characteristic of this fauna is its endemic character—there are 9 truly polar species which are not found outside the coast-line and the islands of the Bering Sea (for example, *Sterna aleutica*, *Erolia ptilocnemis*, *Leucosticte griseinucha*, *Philacte canagica*, etc.).

(7) The Alaskan group, which spreads so far east as the Mackenzie River, is distinguished by its great variety; it included 66 species and forms, out of which 36 can be considered as truly arctic. The American species predominate and 22 species and sub-species are endemic.

(8) The American arctic group inhabiting the region from Mackenzie River up to Baffin Land and Labrador. Out of 45 species nesting there, 30 are truly arctic. The majority of these are found in Alaska, 3 species belong to the Atlantic group, another 3 can be considered as endemics of Baffin Land, and one, *Micropalama himantopus*, has so far been found only in the Canadian tundras.

(9) The Greenland group, which besides the circumpolar species possesses 12 arctic ones. Of these, the majority belong to the European-Atlantic group, while the nearctic is represented by *Chen nivalis* and *Limonites fuscicollis*. There are no endemics.

The above facts permit of the following conclusions:

The bird fauna inhabiting the arctic region of eastern Siberia has apparently been derived from Central Asia. The fauna of the European-Siberian part of the Palæarctic is not closely connected with that of the Atlantic region, but has a distinct systematic affinity with the fauna of eastern Siberia (for example, *Erolia*, *Branta*, *Limosa*). It can be considered, therefore, that the tundras of western Siberia and Europe are inhabited by immigrants from the East. Many American species are found in European Siberia, and although some Siberian species are found in America, they are not so numerous and have spread only so far as western Alaska.

The region of the Bering Sea, which includes the Tchukotsk Peninsula and Alaska, is inhabited by a peculiar fauna of its own, possessing numerous ancient forms. Its water fauna is original and its land fauna is connected with that of America. It is probable,

therefore, that the bird fauna of arctic America originated in this region.

A number of species inhabiting the tundras are derived from the southern Palæarctic, most likely from the modern Kirgiz steppes; their dispersion took place probably along the Turgaisk-Barabinsk plains.

It follows, therefore, that the arctic bird fauna is derived from two distinct centres, namely, eastern Siberia and the region of the Bering Sea. The species derived from eastern Siberia spread throughout the palæarctic; only a limited number reached America. The arctic fauna of America and some species found in extreme eastern Siberia have been derived from the region of the Bering Sea.

The other centres of lesser importance where certain arctic species originated and whence they spread are the coast-line of the Atlantic Ocean and Central Eurasia, probably the modern Kirgiz steppes. The Atlantic bird fauna was formed on the Atlantic coast-line simultaneously with the spreading farther north of warm ocean currents, and from there it spread over the neighbouring continents. The immigrants from southern Eurasia spread through far-eastern Siberia, which they reached by way of the west Siberian plains.

Forestry Research in India.

THE recent announcement in the *Times* of Nov. 8, that the Viceroy, accompanied by Lady Irwin, had opened at Dehra Dun the new Government Forest Research Institute, the largest in the British Empire, if not in the world, is of considerable interest. Early in 1926 it was announced that the Finance Committee of the Legislative Assembly had sanctioned a sum of £833,000 to be spent on the Research Institute. This announcement was discussed in NATURE (Feb. 6, 1926, p. 204). The new buildings just opened by the Viceroy are stated to have cost the sum of £850,000.

Dehra Dun has been the centre of forest education since 1878, when a training college for rangers and foresters was established. Towards the end of 1900 the first research work by the Forest Department was commenced, when a member of the forest staff was appointed for two years as forest entomologist to the Government of India with headquarters at Dehra Dun. This appointment was renewed in 1904, the same officer taking up the post. The question of the formation of a Research Institute was then taken up actively, the sympathy and support of Lord Curzon, the Viceroy, was secured, and the Research Institute with a sanctioned staff, but without adequate buildings or equipment, came into being in 1906.

The new department expanded rapidly and the first Institute buildings were opened in 1914. The War brought about a great opportunity and created a demand for the maximum utilisation of all kinds of Indian forest products. The buildings, deemed adequate in 1911, proved far too small, and the Industrial Commission of 1918 strongly urged the need for extending the Research Institute, its equipment and staff. Effect was given to this suggestion. The Government of India took up an area of 1200 acres of land on the outskirts of Dehra. The Central Institute, with separate buildings for mills, workshops for sawing, testing, and seasoning timber, laboratories, offices, and residences for the staff, are now complete. The main Institute building, with its already splendidly developed series of museums and its library and laboratories, is 1024 feet long and 285 feet wide, and has two stories, Indian timbers having been largely used in construction work, panelling, etc.

Preparatory to the completion of the building, the Government of India appointed a committee of business men to review the organisation of the Institute and to make recommendations for the maximum efficiency in its work. The committee reported very favourably in July last, and the Government has already discussed the proposals with the Inspector-General of Forests, Mr. A. Rodger. The latter warmly praised the recommendations of the committee. The Viceroy, in opening the new buildings, also paid a tribute to the work of the committee, and after describing some of the fine work already accomplished by the Research Institute, stated that the Government intended, within the limits of its financial liability, to give the Institute the scientific staff which it requires.

See also note on p. 840 of this volume.

University and Educational Intelligence.

CAMBRIDGE.—The Adam Smith Prize has been awarded to R. F. Kahn, King's College, for an essay entitled "The Economics of the Short Period".

The Clerk Maxwell Scholarship for the advancement by original research of experimental physics, of the value of £210 a year for three years, has been divided equally between Mr. W. H. Watson, research student of Gonville and Caius College, and Dr. W. L. Webster, of Trinity College.

Mr. Sydney Goldstein, Smith's Prizeman 1927, Isaac Newton Student in the University 1927–28, has been elected into a fellowship at St. John's College.

LONDON.—The following doctorates have been conferred: D.Sc. in chemistry on Mr. H. J. Emeléus (Imperial College—Royal College of Science), for a thesis entitled "The Glow of Phosphorus and Allied Phenomena", and on Mr. I. Vogel (Imperial College—Royal College of Science), for a thesis entitled "Carbon Rings"; D.Sc. in medical and vital statistics on Mr. A. B. Hill (London School of Hygiene and Tropical Medicine), for a thesis entitled "An Investigation of Sickness in various Industrial Occupations"; D.Sc. (Engineering) on Mr. M. A. Hogan (Imperial College—City and Guilds College), for a thesis entitled "The Support of Underground Workings in Coal Mines"; D.Sc. (Engineering) in metallurgy on Mr. J. M. Robertson (Imperial College—Royal School of Mines), for a thesis entitled "The Effect of Variations in the Rate of Cooling on the Microstructure and Constitution of Steel".

The Sir John William Lubbock Memorial Scholarship Prize in mathematics, of the value of £30, has been awarded to Miss I. W. Busbridge, of Royal Holloway College.

READING.—Mr. James R. Matthews, lecturer in botany at the University of Edinburgh, has been appointed to be professor of botany in succession to Dr. W. Stiles, now professor of botany at the University of Birmingham.

THE Wigan and District Mining and Technical College, founded in 1857, gives particulars in its new and enlarged Calendar of the buildings opened for it last June by Lord Chelmsford. Their erection was made possible by grants amounting to £37,000, including £5000 for equipment, from the Miners' Welfare Fund. It is now in a position to offer full-time university degree courses in mining, engineering, chemistry, and general science, as well as in commerce and art.