foreign consumption with his cheap but well-made 'interchangeable' wares, owes his seemingly meteoric success to applied science and in large part, in these later years, to the introduction into his manufacturing and transportation organizations of scientifically trained men, and while it is unquestionably the fact that Great Britain is suffering from neglect of science, and from the barbarous spirit and ignorance of her trades-unions, the real, the fundamental, element of difference probably lies behind all this. The ultimate cause of these developments of the United States which have so astonished the world is that perfect freedom, political and conventional, that freedom of the individual to mark out his own life and strive for his own highest goals, unhampered by governmental dictation or by bonds of caste, which has given the American citizen hope, ambition, purpose and effective energy. It is this which gave him invention, power of achievement, his patent laws, his legislation in behalf of essential industries, even his alert mind and his patriotism and love of country. It is this which has given us our common schools, which has promoted the organization of schools of the arts and trades and productive professions and the whole system of technical education and of industrially applied science. This has given our capitalist a new use for accumulated wealth in the endowment of schools of science and the promotion of education generally, has induced the adoption of organized industrial systems on such an enormous scale and has permitted the introduction of labor-assisting machinery without serious opposition on the part of those certain to be ultimately most benefited by the resultant increase of wages and decreased costs of product. Great Britain is still under the enslaving influences, in large degree, of convention and caste, and it is mainly this which lies at the bottom of her slow progress in the adoption of modern scientific methods, of improved systems and of extensive and intensive technical education.

Meantime, these two books will serve for the present as admirable summaries of progress to date and, later, will have great value historically.

R. H. Thurston.

*THE MALARIA EXPEDITION TO NIGERIA.**

The detailed report of the expedition sent out to West Africa last year by the committee of the Liverpool School of Tropical Medicine has not yet been completed, but its main conclusions can now be given. The expedition was under the direction of Dr. H. E. Annett, demonstrator at the Liverpool School of Medicine. Its main objects were: (1) the exploration and investigation of the conditions under which malarial fever occurs and is conveyed to Europeans, (2) the possibility of adopting any preventive measures against the disease, and (3) the corroboration and extension of recent discoveries and researches on the subject. In Nigeria there are no large communities of Europeans such as at Lagos, Accra, Cape Coast and Sierra Leone, but there were from three to ten white men at each of the stations, with the exception of Old Calabar and Lokoja, where they number a hundred or more. The observations of the members of the expedition confirm the recent discoveries regarding the cause of malarial fever and more especially the part played by mosquitoes of the genus *Anopheles* as the carrier of the disease from an infected to a non-infected person. The examination of the blood of the natives themselves corroborated the work of Professor Koch in the East Indies, and of the members of the Royal Society's Commission on Malaria in West Africa, that the blood parasite which gives rise to malarial fever in man is carried by the mosquito from the native to the European—and more especially from the native children. The examination of the blood of hundreds of native children revealed the interesting fact that between 50 and 80 per cent. of those under five years, between 20 and 30 per cent. of ages between five and ten years, and a small percentage over ten years contained malarial parasites, often in very large numbers. The breeding places of the *Anopheles* were found to be chiefly the dug-out native canoes in the regions of the mangrove swamps, claypits and puddles in the forested district, and at Lokoja puddles and ditches on and alongside the roads and footpaths. It was particularly noticed everywhere how carelessness in the construction of roads and footpaths, and more es-

* From the London *Times*.

pecially in the laying out of the areas surrounding the factories of the European traders was accountable for the production of a large number of breeding places for mosquitoes, which could easily have been avoided. In fact, it is certain that in West Africa such conditions are far more dangerous and more common than the proximity of a marsh or swamp, which is often noted as a cause of fever. Indeed, the mangrove swamp of West Africa has no direct relation to malarial fever, its presence only tending to predispose to a condition of general health rendering the subject more likely to the attack of disease in general. The observations of the members of the expedition lead them to very definite conclusions as to the methods to be adopted for the prevention of malarial fever among Europeans in West Africa. They consider that many of the methods which have been suggested are absolutely impracticable in West Africa—such as the universal dosing of infected persons with quinine for a period, the use of mosquito-proof houses, and of mosquito curtains, and the planting of trees of various kinds; although they are of opinion that such measures among an intelligent and obedient community may be of some efficiency. The two methods upon which alone any reliance can be placed as measures for prevention are (1) segregation of Europeans from natives of all sorts, at a distance of about half a mile; and (2) complete and efficient surface drainage of the whole district in the immediate neighborhood of European quarters. The adoption of these methods in many of the places visited by the expedition would be, even now, easy; in others, especially in the larger towns, it would involve considerable difficulty; but in the stations likely to be made in Nigeria in the near future their adoption would lead to the formation of malaria-free habitations.

---

*CONCILIUM BIBLIOGRAPHICUM.**

THE beginning of the twentieth century marks a new period in the history of the Concilium Bibliographicum. It is now just ten years since the origin of the movement which led in 1895 to the official foundation of the institution by the vote of the Third International Congress of Zoology.

Means were provided for carrying on the work for a preliminary period of five years, in order to determine whether the project could be made a success. The experimental stage is now passed and the verdict of all those who know the work well is that the high hopes entertained for the undertaking have been completely justified.

NUMBER OF CARDS PUBLISHED.

	1896	1897	1898	1899	1900	Total
Zoology, systematic	3345	2291	7539	7960	8452	29587
Zoology, topical			7583	8434	7877	23894
Zool., alphabet. (cross-references)				350	1256	1606
Anatomy		583	1857	936	1875	5251
Physiology		150	1230*	1270	433	3083
	3345	3024	18209	18950	19893	63421

A recent report of the Swiss Society of Naturalists endeavors to estimate in a specific case the saving of time afforded by the card catalogue in obtaining references to recent publications in regard to the trout. The saving is estimated at half a day. But in regard to other cases the saving is far greater. Let any zoologist familiar with past bibliographical resources consider how he would go to work to ascertain what has been published in the past five years in regard to some minute question, such as the fauna of Sumatra. A moment's reflection will suffice to show that it would be a task of many weeks to obtain an answer to such a question. Yet a subscriber to the faunistic part of the bibliography of the *Concilium* would only require a few seconds to find 62 publications dealing with the question. The titles of ten of these publications would, it is true, bear no mention of Sumatra; they are classed here because on perusing the text important references to Sumatra were found. Some, indeed, bear titles that would seem absolutely to preclude any notes on the fauna of Sumatra, as, for example, a work on 'The Insects of Germany.' Subscribers to any considerable portion of the bibliography would have received these references for 80 centimes (8d. or 16 cents), and any per-

* From the general statement for 1900.

* An error was made in this item in our last annual statement, which we now correct.