

ative eye. But even the secondary and earlier grades cannot much longer deprive their pupils of this best fruit of geographic study."

TIDAL STREAMS ABOUT THE BRITISH ISLES.

Two small folios of tidal stream charts, one for the North Sea, the other for the west coast of Scotland, have recently been prepared from official material by F. H. Collins (London, Potter, 1894, five shillings each). Each folio contains twelve charts for successive tidal hours. In several localities, as the Strait of Dover and the Frith of Clyde, the opposite movement of the tidal currents is shown within moderate distances; thus exhibiting nicely the origin of the currents in the orbital motion of the water within the tidal wave. The continuance of flood tide after high water, and of ebb tide after low water, commonly observed in straits and estuaries, and puzzling to many vacation observers, is thus simply explained. A series of similar tidal charts for our Atlantic sounds and bays would be an interesting product of our Coast Survey office.

METEOROLOGICAL CHARTS OF THE RED SEA.

THIS atlas contains twenty-four charts, showing chiefly the winds and the currents for every month. They have been prepared by C. A. Baillie, Marine Superintendent of the (London) Meteorological Office (London, Eyre and Spottiswood, 1895; 21 shillings). The charts of the winds are based on 75,000 observations, mostly along the axial line of the sea. The wind roses exhibit both frequency and force. From June to September northwesterly winds prevail over all the Red Sea, with southwesterly winds east of the entrance strait; from October to January there are northerly winds over the northern half, and southerly over the southern half; from February to May the northerlies gain on the southerlies, and

return to summer conditions. The surface currents are irregular, fluctuating with the winds. This is especially marked at the strait, where no persistent surface inflow is indicated, to compensate the deep outflow that has been described as a steady current and ascribed to the excessive salinity of the sea.

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PRELIMINARY NOTE ON A CONTAGIOUS INSECT DISEASE.

SINCE the establishment, July 1st, at the Illinois State Laboratory of Natural History, of a distinct department for the continuous investigation of the contagious diseases of insects, this work, in which Mr. B. M. Duggar is immediately engaged, has taken two principal directions.

In the first place *Sporotrichum globuliferum* Speg., well known as the fungus of the white muscardine of the chinch bug and of many other insects, was studied oecologically, especially with reference to the effect of exposure of the fungus in its various stages of germination, growth and fruiting for various lengths of time, to a graduated series of temperatures. The troublesome liability of this species to arrest of growth or to complete destruction by drouth, by heat and by cold, together with the fondness which certain prolific field mites have shown for it as an article of food, has led us to search diligently for a bacterial insect disease, presumably less susceptible to these conditions than the muscardines.

Such a disease Mr. Duggar has been fortunate enough to find among a lot of squash bugs (*Anasa tristis*) brought into the laboratory for experimental uses. It has now been clearly shown that this disease is due to a motile bacillus larger than *B. insectorum* Burrill, and of different form, preferably aërobie in habit, but capable, nevertheless, of growing beneath the surface of agar, where the colonies are commonly oval or

fusiform. It spreads over the solid medium freely as a rather thickish film of radiate, lichenose structure and broadly lobate margin.

It multiplies very freely in the blood of insects, doubtless producing there a toxic substance which kills the host, very commonly within two or three days of the first infection. This interpretation of its action is based on the promptly fatal effect produced on small insects by a watery infusion of agar cultures of this bacillus. Young chinch bugs perish in such an infusion in less than a minute, and adults in two or three minutes, while medium-sized caterpillars (*Datana*) dipped into it for ten seconds have begun to writhe and roll in evident distress within two minutes, dying within five or six.

Chinch bugs are readily infected by simple exposure to squash bugs dead with this disease, and die under this infection more promptly, more rapidly, and in larger proportion than if exposed to inoculation with *Sporotrichum*.
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SCIENTIFIC NOTES AND NEWS.

THE 16th and final volume of the first series of the *Index Catalogue* of the library of the Surgeon General's Office of the United States army has now been published. As is well known this is practically a complete index of medical literature, the library now containing 116,847 books and 191,598 pamphlets. The present volume includes 12,759 author titles representing 4,857 volumes and 11,613 pamphlets. It also contains 8,312 subject titles of separate books and 13,280 titles of articles and periodicals. The subjects in the present volumes having the greatest number of entries are water(s), women and wounds. Owing to the large increase in the library since the publication of the index was begun, a second series is needed and the manuscript has

been prepared which will probably make five volumes of the same size and style as those already published. The present volume is probably the last that will be issued under the personal supervision of Dr. John S. Billings, to whom both the catalogue and the library itself are in chief measure due.

ACCORDING to reports in *The British Medical Journal* the milk supply of London is unusually bad. Of fifty samples of ordinary milk examined by Mr. Cassal, twenty-four were found to be below the lowest standard and ten more below the standard requiring 3.5 per cent. of fat. Boric acid preparations had been added to more than one-fourth of the samples. The bacteriological examination made by Mr. Sidney Rowland is still more serious. It showed that every sample examined contained fecal matter, fully 90 per cent. of all the micro-organisms discovered being *bacillus coli communis*.

THE *Revue Scientifique* states that M. Zacharewicz, professor of agriculture at Vaucuse, has cultivated strawberries under colored glass with the following results: (1) The best and earliest fruits were obtained under ordinary glass. (2) Orange glass increased the leaves but injured the quantity, size and earliness of the fruit. (3) Violet glass gave more berries, but they were small, inferior in quality and late.

MR. DAVID T. DAY, Chief of the Division of Mineral Resources of the United States Geological Survey, has issued a bulletin on the mineral products of the United States for 1885 to 1894. The total value of metallic products during 1894 was \$218,168,788. This shows a decided decrease, the products during 1890, 1891 and 1892 having been over \$300,000,000 in value. The non-metallic mineral products for 1894, of which coal is by far the most important, are valued at \$308,486,774, which is also a decrease compared with the immediately preceding years.