brought in the living fleece of a fine merino ram. The owner of the pasture was cherishing the "wonderful new plant," and was not a little horrified when I took out my knife and carefully cut it down. He was more horrified when I told him what it was.

The seeds of some of the Indian banians, I believe, require to pass through the bodies of birds to enable them to germinate. A minute bird (*Dicuum*) feeds on them, and is so small that its dropping cannot fall clear of the branch on which it sits, consequently it is glued to the bark and takes root. Sometimes this takes place on a palm tree; the roots then run down the trunk, and finally smother their host.

British Consulate, Noumea, May 15.

E. L. LAYARD.

Indian Life Statistics.

ALTHOUGH Mr. Hill (in *NATURE* of July 12, p. 250) refers to the *Holi* festival as among possible influences in causing variations of births, he does not say whether he considers lucky and unlucky months and years, which so largely affect marriages in India, as incidents which may have an effect.

HYDE CLARKE.

TIMBER, AND SOME OF ITS DISEASES.¹

X.

IN the months of April and May, the younger needle-like leaves of the Scotch pine are occasionally seen to have assumed a yellow tinge, and on closer examination this change in colour, from green to yellow, is seen to be due to the development of what look like small orange-coloured vesicles standing off from the surface of the epidermis, and which have in fact burst through from the interior of the leaf (Fig. 31). Between these larger orange-

FIG. 31.—To the left is a pair of leaves of the Scotch pine, with the blister-like *Acidia*, *a*, of *Peridermium Pini* (var. *acicola*) projecting from their tissues: these blisters are orange-yellow in colour, and contain spores, as shown in Fig. 33. Between the blisters are the minute *spermogonia*, *b*. To the right is a small branch, killed at *a a a* by *Peridermium Pini* (var. *corticola*), the blister-like yellow *Acidia* of the fungus being very conspicuous. (Reduced, after Hartig.)

yellow vesicles the lens shows certain smaller brownish or almost black specks. Each of the vesicular swellings is a form of fungus-fructification known as an *Acidium*, and each of the smaller specks is a fungus-structure called a *Spermogonium*, and both of these bodies are developed from a mycelium in the tissues of the leaf. I must employ these technical terms, but will explain them more in detail shortly: the point to be attended to for the moment is

¹ Continued from p. 272.

that this fungus in the leaf has long been known under the name of *Peridermium Pini* (var. *acicola*, i.e. the variety which lives upon the needle-like leaves).

On the younger branches of the Scotch pine, the Weymouth pine, the Austrian pine, and some others, there may also be seen in May and June similar but larger bladder-like orange vesicles (*Acidia*) bursting through the cortex (Fig. 31); and here, again, careful examination shows the darker smaller *Spermogonia* in patches between the *Acidia*. These also arise from a fungus-mycelium in the

FIG. 32.—Blisters (*Acidia*) of *Peridermium Pini* (var. *corticola*) on a branch of the Scotch pine: some of the *Acidia* have already burst at the apex and scattered their spores, *b, b*; the others are still intact. (Natural size, after Hess.)

tissues of the cortex, whence the fungus was named *Peridermium Pini* (var. *corticola*). It is thus seen that the fungus *Peridermium Pini* was regarded as a parasite of pines, and that it possessed two varieties, one inhabiting the leaves and the other the cortex: the "varieties" were so considered, because certain trivial differences were found in the minute structure of the *Acidia* and *Spermogonia*.

If we cut thin vertical sections through a leaf and one of the smallest *Acidia*, and examine the latter with the microscope, it will be found to consist of a mass of spores

FIG. 33.—Vertical section through a very young *Acidium* of *Peridermium Pini* (var. *acicola*), with part of the subjacent tissue of the leaf. *h*, the mycelium of the parasitic fungus running between the cells of the leaf: immediately beneath the epidermis of the leaf, the ends of the hyphae give rise to the vertical rows of spores (*b*), the outermost of which (*p*) remain barren, and form the membrane of the blister-like body. The epidermis is already ruptured at *p* by the pressure of the young *Acidium*. (After R. Hartig: highly magnified.)

arranged in vertical rows, each row springing from a branch of the mycelium: the outermost of these spores—i.e. those which form a compact layer close beneath the epidermis—remain barren, and serve as a kind of membrane covering the rest (Fig. 33, *p*). It is this membrane which protrudes like a blister from the tissues. The hyphae of the fungus are seen running in all directions between the cells of the leaf-tissue, and as they rise up and form the vertical chains of spores, the pressure gradually forces up the epidermis of the leaf, bursts it, and the mass of orange-yellow powdery spores protrude to the exterior enveloped