thus the products of their activity must issue through evolutionary processes; what they will become after millions of generations must be determined so soon as these "idioblasts" combine as the first cell. If, however, we are to assume that the hereditary qualities of "idioblasts" can be eliminated by environment—as we must assume if we attempt to combine evolution with epigenesis—I reply, as in my earlier proposition, we have no need for "idioblasts" or any other "hereditary unit." All we then need for a theory of heredity is some plastic *primordium* and environment. Then, as such *primordium* would have no hereditary predisposition, there would be no room for predeterminism, and it would remain for ingenious theorists in love with epigenesis and the tape-measure system of estimating the cosmos, to explain the persistence of types under variable environment, and the differentiation of types under identical environment.

I can appreciate the eagerness of the "mechanical school" to welcome any loophole of escape from predeterminism. A genuine epigenetic theory is, no doubt, their great desideratum. If they "won't be happy till they get it," I venture to predict that they are doomed to a lengthened spell of dumps! The main issue raised by Hertwig in "The Cell," is: evolution or epigenesis? He tries to accept both, basing epigenesis on evolution. Thereby, in my opinion, he stultifies both doctrines. All biologists, so far as I am aware, start their theories from the basis of differentiated units. Equally they all evade the attempt to account for the differentiation. This omission I have endeavoured to rectify in "Rhythmic Heredity" (Williams and Norgate).

H. CROFT HILLER.

A Sound-producing Insect.

IN your issue of June 13, Mr. S. E. Peal speaks of a lepidopterous insect in Assam which makes a tapping noise when flying. His description so closely resembles an insect in Gorakhpur, that I think it must be identical or closely allied.

The alar expanse is about three inches. The wings are broad, not indented, of a very dark chocolate-brown colour on both sides, with one small yellowish-brown blotch on the costa of fore-wing on upper surface. The body is thin, like a butterfly, but the antennæ are not clubbed. It is apparently a Geometer or slender-bodied Bombyx. It flies in the darkest parts of woods, just as twilight is settling into night, and is very hard to see when standing up. By lying down, so as to get the sky as a background, it is easily visible. It cannot be netted in the ordinary way, as the eye cannot follow it, but by standing still till one is heard near, and then striking in the direction of the sound, one may sometimes be successful. I first succeeded in striking one down with my "solah topi"; afterwards I netted two, and brought them home alive, to see how the noise was made. The sound is a sort of clicking, which may be fairly imitated by striking the nails of the thumb and fore-finger together. From the thorax, between the bases of the wings, a stiff bristle (like a pig's) projects about a quarter of an inch. The noise is made by this bristle catching in the hind-margin of the fore-wings and the costal margin of the hind-wings. I fancy it must be of a warning character, as if the insect is eatable, it would help to enable bats and birds to find it. I think I have noticed that the insect is attracted by imitating the clicking sound with the nails, but could not satisfy myself on this point.

J. R. HOLT.

A FEW MORE WORDS ON THOMAS HENRY HUXLEY.

TWO scenes in Huxley's life stand out clear and full of meaning, amid my recollections of him, reaching now some forty years back. Both took place at Oxford, both at meetings of the British Association. The first, few witnesses of which now remain, was the memorable discussion on Darwin in 1860. The room was crowded though it was a Saturday, and the meeting was excited. The Bishop had spoken; cheered loudly from time to time during his speech, he sat down amid tumultuous applause, ladies waving their handkerchiefs with great enthusiasm; and in almost dead silence, broken merely by greetings which, coming only from the few who knew, seemed as nothing, Huxley, then well-known unknown outside the narrow circle of scientific

workers, began his reply. A cheer, chiefly from a knot of young men in the audience, hearty but seeming scant through the fewness of those who gave it, and almost angrily resented by some, welcomed the first point made. Then as, slowly and measuredly at first, more quickly and with more vigour later, stroke followed stroke, the circle of cheers grew wider and yet wider, until the speaker's last words were crowned with an applause falling not far short of, indeed equalling, that which had gone before, an applause hearty and genuine in its recognition that a strong man had arisen among the biologists of England.

The second scene, that of 1894, is still fresh in the minds of all. No one who was present is likely to forget how, when Huxley rose to second the vote of thanks for the presidential address, the whole house burst into a cheering such as had never before been witnessed on any like occasion, a cheering which said, as plainly as such things can say: "This is the faithful servant who has laboured for more than half a century on behalf of science with his face set firmly towards truth, and we want him to know that his labours have not been in vain." Nor is any one likely to forget the few carefully chosen, wise, pregnant words which fell from him when the applause died away. Those two speeches, the one long and polemical, the other brief and judicial, show, taken together, many of the qualities which made Huxley great and strong.

Among those qualities perhaps the most dominant, certainly the most effective as regards his influence on the world, were on the one hand an alertness, a quickness of apprehension, and a clear way of thinking, which, in dealing with a problem, made him dissatisfied with any solution incapable of rigid proof and incisive expression, he seemed always to go about with a halo of clear light immediately around him; and, on the other hand, that power of foreseeing future consequences of immediate action which forms the greater part of what we call sagacity. The former gave him his notable dialectic skill, and mark all his contributions to scientific literature; the latter made him, in addition, an able administrator and a wise counsellor, both within the tents of science and beyond. These at least were his dominant intellectual qualities; but even more powerful were the qualities in him which though allied, we distinguish as moral; and perhaps the greater part of his influence over his fellows was due to the fact that every one who met him saw in him a man bent on following the true and doing the right, swerving aside no tittle, either for the sake of reward or for fear of the enemy, a man whose uttered scorn of what was mean and cowardly was but the reciprocal of his inward love of nobleness and courage.

Bearing in mind his possession of these general qualities, we may find the key to the influence exerted by him on biological science in what he says of himself in his all too short autobiographic sketch, namely, that the bent of his mind was towards mechanical problems, and that it was the force of circumstances which, frustrating his boyish wish to be a mechanical engineer, brought him to the medical profession. Probably the boyish wish was merely the natural outcome of an early feeling that the solution of mechanical problems was congenial to the clear decisive way of thinking, to which I referred above, and which was obviously present even in the boy; and that it was not the subject-matter of mechanical problems, but the mode of treating them which interested him, is shown by the incident recorded by himself, how when he was a mere boy a too zealous attention to a post-mortem examination cost him a long illness. It is clear that the call to solve biologic problems came to him early; it is also clear that the call was a real one; and, as he himself has said, he recognised his calling when, after some years of desultory reading and lonely irregular mental activity, he came under the influence of Wharton Jones at Charing Cross Hospital. That made him a biologist, but con-