knows the meaning of 'type' and 'typical,' but the meaning of those terms to the zoologist is something quite different. The scientific man is constantly hampered by the formalities of his science; and zoology is not advanced by the fact that the holotype, and perhaps the paratypes, of a species are often aberrant forms, *i. e.*, are *not* typical in the ordinary English sense. Of this no instances need be quoted.

Now while many individuals of a species may be typical (in the ordinary sense), we can conceive of one form, not necessarily existing, that represents a kind of central type, or, as I have expressed it elsewhere, a composite portrait of the species. It is this that is the 'type' of the man in the street. Instances of this are to be found in the statistical tables of Galton, Weldon, Bateson and others; a type-formula for *Ranunculus repens* was given by Pledge in *Natural Science* for May, 1897; but some of the most interesting are J. M. Clarke's studies of *Leptodesma* (*Amer Geol.*, April, 1894, and *Nat. Sci.*, June, 1894).

For this kind of type, far removed from a type-specimen, we want a name; and as the word type has been stolen from us it will save confusion to avoid it altogether. J. M. Clarke used 'fundamentum' as an alternative; but other American biologists attempted to use this as the equivalent of *Anlage*, while the fundament of man in the street is quite a different anatomical conception. Perhaps the word 'norm,' with its adjectival form 'normal,' would give the meaning most nearly, though 'normal has, of course, its more literal sense of 'at right angles to.' The norm of a species varies with locality or with horizon, becoming in the former case the norm of a subspecies, in the latter case the norm of a mutation. So also one can sometimes imagine the norm of a genus; and how very different a thing that would be from the type-species, at least of many genera! The genus-norm also may vary with locality. Thus the species of *Gissocrinus* in Gotland group themselves around *G. typus*, but those in England around *G. goniodactylus*.

This conception of the norm will probably be found at least as helpful as that of the 'hypoplastotype.' It would be of value if it did no more than draw our thoughts from the wearisome history of human error back to the facts of nature.

With reference to what Mr. Schuchert calls a 'plastotype,' but which I would as lief call a 'cast o'type,' or perhaps 'electr-o-type,' may I put to him the case of a cast made from a natural matrix which has subsequently been partly destroyed, in order to expose its inner recesses more fully or to admit of the extraction of the cast? Such a cast would preserve features that could never again be shown by the matrix, and might therefore find a place in the hierarchy labelled 'type material' by Mr. Schuchert.

Another question. When the holotype and paratypes of a species have gone the way of all flesh; when topotypes are impossible and metatypes unknown; when even its plastotypes are not to be had—then what are we to call the specimen selected for special description by the reviser and reestablisher of the species? Should it not be something distinct from the ordinary 'hypotype?' But this subject of hypotypes offers so wide a field for the neologist that prudence bids me cease.

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'ORGANIC SELECTION.'

To the Editor of Science: In Science for April 23, 1897, J. Mark Baldwin submitted, in a paper headed 'Organic Selection,' an hypothesis which he implies to have originated 'in certain recent publications' by H. F. Osborn, C. Lloyd Morgan and himself in the year 1896. The hypothesis is based on the idea that characters acquired during the life of an individual are, to a considerable extent, those characters which cause the survival of that individual; or, in other words, that an organism which varies not only because of variations in the germ-cell, whence it evolves, but also because of the variety of forces acting on it while it is so evolving (especially after birth), and, on account of these variations, survives and reproduces at the expense of other organisms, must so survive partly on account of the one set of variations and partly on account of the other set. On this basis it is argued that, as connate characters in general persist, those particular connate characters which are identical with those acquired characters with which they coexist and to the virtue of which the survival of

the individual is in part due will persist in the next generation; and, furthermore, that there will arise, by like processes in successive generations, an accumulation of such connate characters. Hence, it is said there may appear to be an inheritance of acquired characters where, in reality, there is only an accumulation of connate characters identical with the acquired characters which, as it were, shield the connate characters while they are accumulating in successive generations.

My intention is not to discuss the merits of this hypothesis, but to say that, if I understand it, it is by no means new. It was clearly set forth by Herbert Spencer, in his 'Principles of Biology,' in the year 1866. Though it may have been presented by him or by others before that time, in writings of which I am uninformed, it will be of interest to examine the following statement of it in the work referred to:

"The working out of the process is here somewhat difficult to follow; but it appears to me that as fast as the number of bodily and mental faculties increases, and as fast as the maintenance of life comes to depend less on the amount of any one, and more on the combined action of all; so fast does the production of specialties of character by natural selection alone, become difficult. Particularly does this seem to be so with a species so multitudinous in its powers as mankind; and above all does it seem to be so with such of the human powers as have but minor shares in aiding the struggle for life—the esthetic faculties, for example.

"It by no means follows, however, that in cases of this kind, and cases of the preceding kind natural selection plays no part. Wherever it is not the chief agent in working organic changes, it is still, very generally, a secondary agent. The survival of the fittest must nearly always further the production of modifications which produce fitness; whether they be modifications that have arisen incidentally, or modifications that have been caused by direct adaptation. Evidently those individuals whose constitutions or circumstances have facilitated the production in them of any structural change consequent on any functional change demanded by some new external condition, will be the individuals most likely to live and to leave descendants. There must be a natural selection of functionally-acquired peculiarities, as well as of incidental peculiarities; and hence such structural changes in a species as result from changes of habit necessitated by changed circumstances, natural selection will render more rapid than they would otherwise be." (Prin. of Biology, Vol. 1, p. 454.)

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EUPROCTIS CHRYSORRHŒA IN MASSACHUSETTS.

ON May 13th Dr. Roland Thaxter brought me a few larvæ he had found on pear trees in Cambridge. After examination I identified these as *Euproctis* (*Porthesia*) *chrysorrhœa* Linné, commonly called the Goldtail, a species hitherto unrecorded from this country. It occurs locally in England, is abundant in central and southern Europe, and is also recorded from northern Africa and Asia Minor. When found in great profusion their ravages are exceedingly serious.

May 15th, Dr. Thaxter and I visited a locality in Somerville, not far from the Cambridge line, and found the larvæ extremely abundant on pear, and somewhat less so on apple. We were told that they were noticed last spring for the first time and that they fed only on pear and apple. The larvæ feed gregariously and build small, tent-like nests. A slight jar causes them to drop from the trees and they give rise to further annoyance by the urticating power of their hairs. The larva may be described briefly as blackish with ochreous hairs, dorsal line double with pale ochreous, reddish markings, subdorsal line broad, with interrupted white markings; the tenth and eleventh segments have a conspicuous, dorsal, red tubercule. The head and thorax of the moth are white; the abdomen is white, with a brown or buff anal tuft; the wings are pure white, frequently with a black spot on the lower posterior margin of the fore wings. The alar expanse is 32–38 mm.

As previously stated, they have been found to feed here only on pear and apple, and the attempts I have made to effect a change of food have, thus far, failed. Abroad, however, the species has many food plants, apple, pear, plum, hawthorn, bramble, elm, willow, beech, oak, hazel nut, and hornbean being among those recorded. At present the larvæ seem to be confined to a rather limited area in Somerville and Cambridge. It is difficult to give an adequate idea of their abundance, their increase since last year, and their destructiveness. If the