

thought, and it may be commended to all who desire the welfare of their country. We hope, however, the education of the future will teach that it is unpardonable for a book of this kind to be published without an index.

Scouting for Boys. A Handbook for Instruction in Good Citizenship. By Lieut.-General R. S. S. Baden-Powell, C.B. Parts i. and ii. (London: Horace Cox, 1908.) Price of each part, 4d. net.

IN an earlier volume, "Aids to Scouting," Lieut.-General Baden-Powell has shown that the characteristics of the good scout are those which distinguish the successful man of science. In his appeal to headmasters in 1901, Prof. Armstrong pointed out how full of good advice in the training of children that book is. The present book, which is to be completed in six parts, two of which have now appeared, also may be recommended as likely to result in the development of faculties of observation, regard for accuracy, conscientiousness, and other desirable characters.

Photograms of the Year 1907. Text, pp. 48; illustrations, pp. 112. (London: Dawbarn and Ward, Ltd., 1907.) Price 2s. net.

BETWEEN the covers of the book we have a collection of reproductions of about 200 different pictures, about one-fourth of which are selections from the exhibitions held recently in London, while the remainder serve as examples of the pictorial work of the year, not only by home, but by colonial and foreign workers. The pictures are excellently reproduced, on stout paper, and every care seems to have been taken to ensure their being as true as possible to the originals.

In the text Mr. H. Snowden Ward gives us an interesting critique of the "Work of the Year," and contributions are included from the pens of various well-known colonial and foreign photographers.

Those who wish to make themselves acquainted with the main features of last year's work in pictorial photography will find much to interest them in the present issue.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

Stability in Flight.

Now that two or three people have succeeded, by skilful manipulation, in travelling on a more or less determinate course in the air, it would be well that inventors should turn their thoughts to securing stability in flight without the demand of constant attention on the part of the aeronaut.

In a note written some years ago on this subject, I said:—"No flying machine will be satisfactory which does not contain some automatic device for securing stability. The principles which must be embodied in such a governor are in themselves simple, and may be realised in many ways.

"The principal axes of the flying machine have to be kept related in a definite way to the direction of the force of gravity and of the accelerations.

"To do this, the action of the governor must depend on the position of the axes of the machine in relation to the direction of two pendulums (or their equivalents), one having a very long and the other a very short period. In this connection, 'long' and 'short' have reference to what may be called the rate of instability." (A twenty-second period for the long, and a tenth of a second for the short pendulum, would be the sort of thing required.)

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The long pendulum presents the greatest practical difficulties, but they can be met.

Until something of this kind is done, flying will remain a feat of personal skill. Probably most people could acquire this skill if they could practise when young, but, in learning to fly, any accident generally puts an end to the power of gaining further experience.

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The Inheritance of "Acquired" Characters.

MAY I have space for a communication dealing, not with Mr. Spicer's letter (p. 247), but with some problems it suggests?

An individual develops from the germ-cell under the influence of various stimuli, of which the principal are nutriment, use, and injury. Nutriment supplies the material, but *not* the stimulus, for *all* growth. Up to birth, the human being, for example, develops wholly or almost wholly under this stimulus. Subsequently some of his structures continue to develop under it, for instance, his hair, teeth, external ears, and organs of generation, which grow whether or not they be used. But most of his structures now develop mainly, if not solely, under the stimulus of use, for example, his voluntary muscles, limbs, heart, and brain. Thus if the limb of an infant be paralysed it grows comparatively little, and the muscles atrophy. If the individual be injured, as by a cut, the injury supplies the stimulus for the growth (scar) which repairs the damage.

Scientific writers are accustomed to divide the characters of a living being into those which are "inborn" or "innate" and those which are "acquired," and are in the habit of declaring that the former tend to be "inherited" by offspring, but not the latter. I doubt if anything in science has been provocative of more confusion, misunderstanding, and futile controversy than this use of inaccurate terms. All our evidence indicates that the structures of the child are derived, not from the corresponding structures of the parent, but wholly from a germ-cell which dwelt as a parasite within the parent. Only in a purely metaphorical sense, then, does the child inherit from the parent. It resembles the parent merely because parent and child are derived from very similar germ-plasms which have been acted on to a very similar extent by very similar stimuli.

If we analyse the words of biologists carefully, we find that by an inborn character they imply one which has developed under the stimulus of nutriment, and by an acquirement one which has developed under the stimulus of use or injury. When they speak of the "transmission" of an "inborn" character, they imply that it has developed in both parent and child under the stimulus of nutriment; when they speak, as is still sometimes done, of the transmission of an acquirement, they imply that a character which developed in the parent under the stimulus of use or injury has developed in the child under the stimulus of nutriment. Apart from the immediate effects of injury (e.g. loss of tissue), I think it would puzzle anyone to indicate in what respects an "inborn" character is more innate and inherited than an acquirement. Obviously these vitally useful powers of growing, of developing in certain fixed directions under the stimulus of use and injury are just as truly inborn and rooted in the germ-plasm, just as truly products of evolution, as the power of growing under the stimulus of nutriment. It follows that the so-called acquirements are "innate" and "inherited" in precisely the same sense as the so-called inborn characters.

It is true that, since no character can be used or injured until it exists, all structures begin to develop under the stimulus of nutriment, and therefore that all acquirements are modifications of innate characters. But early development is no evidence of innateness, and most acquirements, like most of the growth made under the stimulus of nutriment, are nothing other than extensions of growth previously made. It is true also that innate characters arise inevitably as the child develops, whereas some acquirements are more or less rare. But this is only because the stimulus of nutriment is inevitably received,