

## Iles's "Inventors at Work"

THE purpose of Iles's *Inventors at Work*\* is not evident. That the author had a purpose is to be presumed, but if he has carried it out it was a purpose so subtle as to escape the notice of the reader. It is a contribution to popular rather than technical literature, but in the main fails to fulfil the promise of its title in that it does not show us the inventor at work, but aims rather to catalog the results of invention in certain departments of the world's work.

The only key to the author's plan is found in his chapter headings. Under such general classifications as form, size, properties and measurement, as attributes of matter, he meanders thru chemistry, physics, civil engineering, electricity, naval architecture, mathematics, astronomy, gas and perhaps fifty other subjects, with incidental mention of hundreds more. The illustrations are numerous, but they seem unrelated and to a great extent haphazard. The net result is a book of no little interest, but unsatisfactory to the student and wholly disappointing to the reader desirous of really knowing anything about any subject. That it is full of facts presented in an interesting way is undoubtedly true, but the objection to it, and to all books of the same class, is that it treats facts as bits of colored glass are treated in a kaleidoscope, making attractive, but confusing, transient and usually futile combinations with each turn of the barrel.

As a stimulus to invention and discovery this book may or may not accomplish its apparent purpose, according to the temperament of the reader. If prac-

tical it would help him but little; if purely imaginative and prone to make inventions which are not needed and cannot be profitably developed it might prove an inspiration. In either case the end in view would be better served by much simpler means. How does the mind of the inventor work? This question was once answered to the satisfaction of the writer of this review from watching Thomas A. Edison in a railroad car. He was a passenger on a special train, one of a party going to celebrate the birthday of a great engineer. Being deaf, Mr. Edison took no part in the conversation, but sat alone. An empty cigar box was left on the seat beside him and forgotten. The landscape being uninteresting, Mr. Edison looked about him, noticed the cigar box, reached for it and began to examine it, not in the superficial way in which the average man would have looked at it, but with what John Burroughs calls "that steady aim of the eye," which both sees and perceives. He first looked it all over outside, examining its corners and noting how it was framed. Then he raised and lowered the lid to see how it was hinged, tested the thickness of its walls and its stiffness and strength under compression between his strong hands. By the time the examination was finished he probably knew all about a cigar box of the typical pattern and understood why everything about it was as it was. But he did not stop there. Unconscious of observation, he began a series of experiments to see what a cigar box, or something of that shape, was good for besides holding cigars. Being hollow and resonant, like a fiddle body, he put it to his teeth to see if it aided in transmitting sound vibrations to the organs of hearing. These tests were made in as many positions as its shape permitted. They were repeated with the cover slightly raised, more raised and wide open. Obviously here was an ingenious deaf man studying methods of improving the audiphone. What thought remained when he laid the box down no one but himself knew, but this piece of rubbish had certainly taught him all it was capable of imparting, and whether or not it repaid the attention it had received it was studied with exactly

\* *INVENTORS AT WORK. With Chapters on Discovery. By George Iles. New York: Doubleday, Page & Co. \$2.50.*

the kind of attention to things of unknown utility which has made Mr. Edison the great inventor he admittedly is. To observe an incident of this kind is like hunting with the camera. In no other way may one know what really are the habits of the animals concerning which he may be curious. The story of inventions as given to the world by inventors are rarely told truthfully. They are colored largely by imagination. But if they could be told exactly and in minute detail they would not be likely to be instructive to others, since no two minds work along exactly parallel lines, and not one man in a thousand, having attained a result, is able truthfully to describe the path he followed in reaching it.