

Science to The Aid of Civilisation

MANY thousands of years ago man existed on this planet as a creature practically indistinguishable from the man of to-day. There is indisputable evidence that modern man is in no way the intellectual superior of his remote predecessor. Thousands of years since, languages were invented which were probably more expressive than any modern tongue. Thus the literature of the Greeks and the Romans depicts human emotions and feelings with an accuracy and a delicacy unrivalled at the present day. And so it is with many other branches of learning and of craftsmanship. For example, who can compare modern art with those gems of beauty handed down to us by our ancestors? Can the modern sculptor rival in conception and design his remote ancestor?

In only one branch of learning do we find a spectacular development in recent times, and that is in the study of science in its various ramifications. Not that science is a modern discovery—for a knowledge of science dates back to the ancient Greeks and Persians—but it is only in recent times that intensive experimental work has succeeded in opening up new fields of thought hitherto undreamt of by our predecessors.

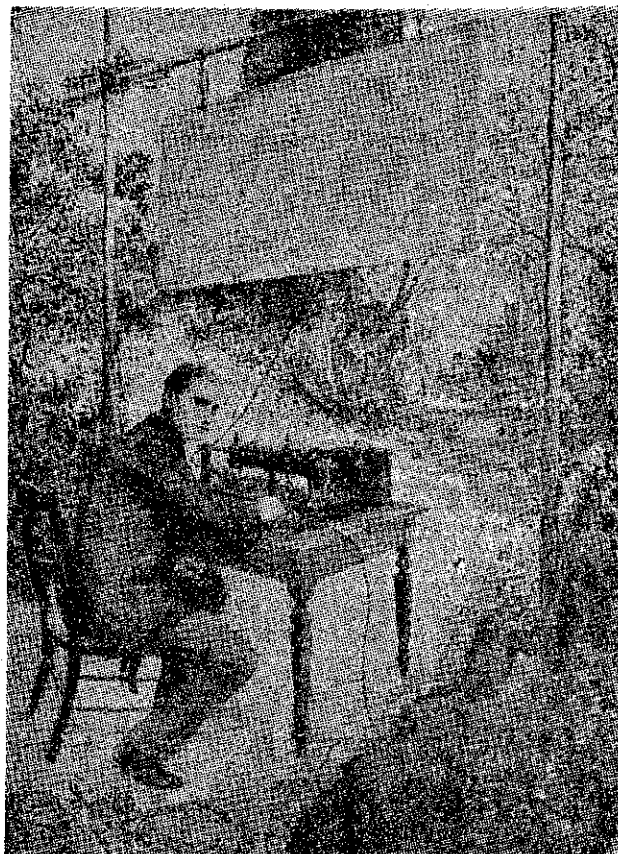
Until the invention of the steam engine and of the internal combustion engine the speed of travel was practically the same as in the early days of antiquity—the speed of a beast of burden or of a wind-driven boat. To-day the locomotive, the steamship, the motor-car, the aeroplane have completely revolutionised all methods of transport, enabling us to arrive at our objective in minutes instead of hours or days.

In prehistoric times the speed of messages was limited by the speed of a horseman. To-day the electric telegraph and the wireless have annihilated space to such an extent that it is possible for a listener in New Zealand to hear a speech delivered in London before those seated at the back of the hall itself. So slowly does sound travel in air compared with the infinite speed of electricity that some of us recently heard the referee's whistle controlling the Test game in Sydney before the spectators in the distant parts of the Oval. The time is not far distant when we shall be able to see in our own homes events happening in the most distant parts of the earth, just as we are now able to hand down to posterity almost living records of everyday events through the developments of modern photograph and filmcraft.

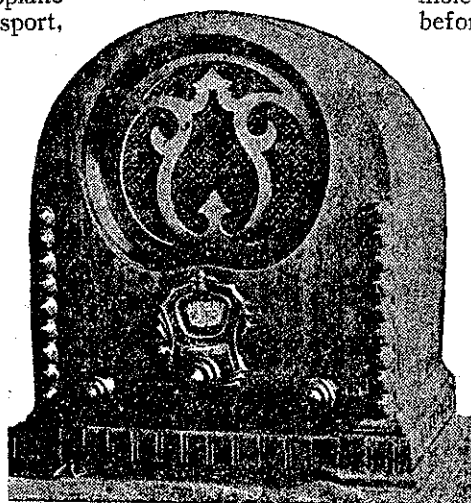
The world of science is a very complex structure, each science dove-tailing the one into the other, each ever ready to lend a helping hand to a sister-science in difficulty. In a few short minutes one cannot explore such a world very

A talk broadcast from 3YA

By Dr. H. G. DENHAM



1902



1932

The amazing progress made in all branches of science during the past thirty years is particularly well illustrated in the rapid development of radio. The top illustration shows Marconi as a young man, experimenting with a crude prototype of the modern highly efficient transmitter, while below it is shown a typical modern receiver.

thoroughly, but we can at least wander along some of science's pleasant little by-ways and villages. For a moment let us halt at the village marked "Methods of Measurement." Here indeed the study of physics reigns supreme. In every branch of experimental work the investigator looks to the physicist to provide delicate instruments for the measurement and control of temperature, electricity, etc., and nobly has he responded to the call.

The extraordinary sensitiveness of modern methods may be best illustrated by a few simple examples. Thus, if one-sixtieth of an ounce of radium be equally divided among every living person, modern electrical methods would enable us to detect whether any particular person had his share upon him, even if he had swallowed it!

Methods of precision have enabled the scientist to determine with uncanny accuracy the infinite number of particles, or molecules as we call them, present in any given space. Thus, if a tumblerful of water is poured into the sea, and in the course of time this becomes uniformly distributed throughout every river, lake, sea and ocean, and if a tumblerful of water is then dipped out from any such lake or sea, science has taught us that it will be found to contain no fewer than 1000 of the molecules or particles originally present in the tumbler.

One more example. If an ordinary electric light bulb be taken and a tiny hole be made in the side just large enough to let through a million such molecules of air per second, it will take a million years before the bulb is filled with air at atmospheric pressure. These examples show us the wonderful accuracy with which measurements may now be made, if the need be there for any purpose whether of science or of industry which after all is only applied science.

AND yet, if one examines the scroll of science, one finds that it is but rarely that the physicist has made an outstanding contribution to the well-being of the civilised world. His discovery is generally adapted to the needs of the community by the chemist, the engineer, the industrialist, before its real value becomes apparent. But do not misunderstand me on this point.

The physicist is a necessary cog in the wheels of science without whom the scientific machine would soon break down; he forges the weapon of offence, and there oftentimes his work ceases. The chemist relies on all sides upon his brother-physicist, much as a doctor relies upon his stethoscope or his hypodermic syringe, useless little things in themselves, but of supreme value in proper hands. With the weapons provided him by the physicist, the chemist and his industrial colleagues proceed to (Continued on page 24.)