

SCIENCE

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Institution Building, Washington, D. C.

THE COMMON GROUND OF THE CHEMIST AND BIOLOGIST¹

THE highest type of mind is forever following back-
ward searching for the simple units from which the
universe has been built, formulating laws and run-
ning forward in thought on the basis of these laws
toward the ultimate. The chemist began with the four
elements of Empedocles and Aristotle—air, fire, earth
and water; then through the long history of the atoms
to Dalton's law and Mendeleeff's table; on to ions,
electrons and quanta. The biologist began centuries
later with the recognition of the cell in the work of
Schleiden and Schwann and has progressed from pro-
toplasm to nucleus, to chromosomes, to electrolytes—
and here meets the chemist in his search.

For the chemist, however, the *atom* is still the stable
unit, just as for the biologist the *cell* is the stable unit.
In spite of all the division and subdivision these two
working units become only the more veritable, the
atom in chemical reactions, the cell in life or living
chemistry: each student moves backwards and for-
wards from these in his analysis and in his synthesis.
The common ground then is—how do the atoms of our
elements enter into the life of our cells?

We are continuously faced in cell analysis with the
fact that all we find in our cells are the same elements
that we find in nature outside of these cells. As Paul
wrote in his I Corinthians (chap. 15, verse 47) "The
first man is of the earth, earthy: the second man is
the Lord from heaven." There is only the factor of
life to separate the two.

The two sciences, chemistry and biology, have grown
so rapidly in the last fifty years that one can scarcely
find a master of both. This is true of knowledge in
general. It far outstrips the individual mind. As
Pope put it even two centuries ago:

One science only will one genius fit,
So vast is Art; so narrow human Wit.

The biologist has two great fields to study: first, the
unicellular organisms which can be obtained in pure
culture in which each cell is a duplicate of all other
cells in the mass of culture; and, second, those care-
fully balanced congregations of cells of many varieties
living in communities and constituting animals and
plants.

In our disease problems the unicellular organisms
often inhabit and live in symbiosis, or with destruc-

¹ From the Hygienic Laboratory, Washington, D. C.

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Write for Bulletin 273

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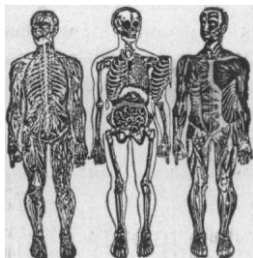
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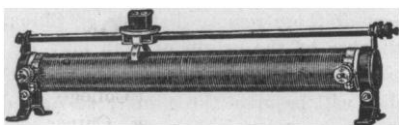
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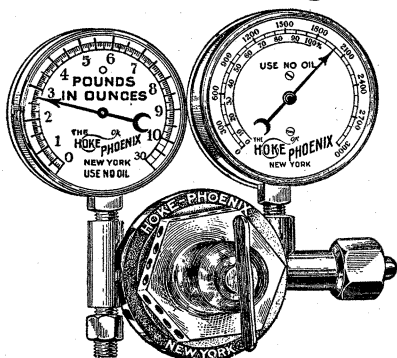
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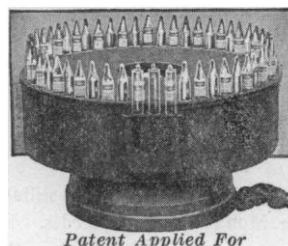


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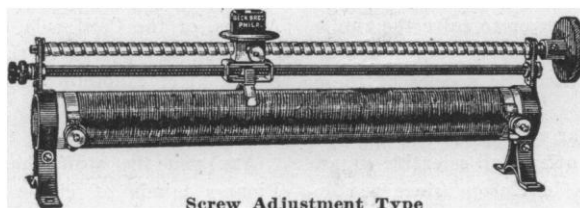
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