

CHEMISTRY

Industrial Plants Loose CO₂ But Green Plants Return It

No Danger Exists That Earth's Crust Will Change Or That Atmosphere Will Contain Too Much of Gas

EVEN though man has released into the atmosphere some 180,000,000,000 tons of carbon dioxide gas by the burning of mined fuel during the last half century, the plants of the world each year return this carbon dioxide a thousand fold through their decay or combustion.

Dr. Robert E. Wilson, president of the Pan American Petroleum and Transport Company, who reports this result (*Industrial and Engineering Chemistry*) also notes that the fears of those people who shudder at the "greatly" increased carbon dioxide content of the air which is produced by modern industrial activity, are unfounded.

If all the carbon dioxide dumped into the atmosphere in the last 50 years had not been removed by returning the elements involved to the earth in some form or other, says Dr. Wilson, the carbon dioxide content of the atmosphere would have increased only two-thousandths of one per cent. in that time; from 0.03 to 0.032 per cent.

The controlling factor which determines how much carbon dioxide there is in the air, reports Dr. Wilson, is the water of the earth's oceans. Available data indicate there is some 30 to 40 times as much carbon dioxide dissolved in the ocean as is present in the atmosphere.

"The average partial vapor pressure

of this carbon dioxide," says Dr. Wilson, "is probably largely what determines the average carbon dioxide content of the air, so that well over 90 per cent. of any excess carbon dioxide introduced into the atmosphere eventually finds its way into the ocean, leaving the composition of the former virtually unaffected."

The chemist, points out Dr. Wilson, sometimes needs to be reminded that all his advances are really puny efforts when placed beside changes needed to make sizable alterations in the state of the earth.

"The combined result of all our mining and chemical activity to date has made but an infinitesimal alteration in the composition of the earth's crust or sea water," he declares. And this, despite the fact that in the past half century some 50,000,000,000 tons of carbon have been obtained as either coal, lignite, crude petroleum or natural gas.

There is no fear, concludes the petroleum scientist, that chemistry and industry are, in some way, working an atmospheric transformation that might threaten human existence.

Science News Letter, August 14, 1937

English clover would grow in Australia, but produced no seed until bees from Great Britain were brought there for cross-fertilization purposes.



Paleolithic Planters?

DID FARMING have its earliest beginnings in the Old Stone Age?

Prof. Oswald Menghin of the University of Vienna, thinks it possible. If he is correct in his conjecture, farming becomes a vastly older way of life than has usually been supposed.

There is no doubt, of course, that agriculture was widespread and well developed in the New Stone Age, whose beginnings were something like 20,000 years ago. Abundant archaeological evidence shows that men grew grain and kept herds in the Neolithic of Egypt, of Mesopotamia, of India, of China. We do not know the age in years of the pre-Columbian corn-pumpkin-tobacco agriculture in America, but there can be no question that it also arose in a Neolithic culture stage.

The common assumption has gone beyond this, and credited the Neolithic peoples with the actual invention of agriculture. To the Paleolithic, or Old Stone Age, peoples is assigned merely the role of hunter, fisher, and grubber-up of wild-growing roots.

Prof. Menghin points out that in the Old Stone Age, which almost certainly runs back 200,000 years and possibly much more, the distribution of one particular type of stone blade, well adapted for turning the soil, coincides with the general distribution-zone of plants with thick, edible roots and tubers.

This kind of blade is usually called a "hand-ax", but it was adapted to other uses than chopping wood. It could also be held in both hands as a kind of crude hoe or trowel, and so serve well as a grubbing tool.

Conjectures on the Neolithic origin of agriculture usually picture men of the New Stone Age as gathering wild grains and other food plants, and then discov-

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