

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.

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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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ering accidentally that they could be sown. Prof. Menghin carries the same mode of reasoning back to his Old Stone Age root-grubbers. If Neolithiker could

spill barley grains and see them grow, why should not Paleolithiker lose a few parsnips and later find them sprouting?

Science News Letter, August 14, 1937

ARCHAEOLOGY

Evidence of Human Artifacts Points To Earliest Existence

By E. N. FALLAIZE
Royal Anthropological Institute of London

THE EARLIEST known traces of man's existence in Palestine, and it may be, almost the earliest evidence of man in the whole world, have been discovered in deposits now known as the Bone Beds of Bethlehem.

The discovery was made by Miss E. Gardiner and Miss D. Bate excavating the deposits, in what appears to be a swallow hole near Bethlehem, on behalf of the Wellcome Marston Archaeological Research Expedition to the Near East.

The discovery of the swallow hole was made some few years ago when excavations were being made for a water supply. On the nature of the deposits becoming apparent, a concession to excavate was granted to J. L. Starkey on behalf of the Wellcome Expedition. The actual examination of the deposits was entrusted to Miss Bate, the well known authority of the British Museum of Natural History on paleontology, and Miss E. Gardiner, Lecturer on Geology of London University.

Two short seasons' work had produced some interesting and scientifically valuable paleontological specimens, but it was not until the season of 1937 that indubitable evidence of man's handiwork was forthcoming. Specimens of the animal remains and worked flints which were associated with them from these deposits are now on exhibition at the Wellcome Research Institution, London.

The most striking specimen among the animal remains is the hinder part of the shell of a gigantic tortoise of a species not yet identified. With it were several detached plates of the shell and a huge leg bone. Although only the tail part of the shell was found whole, it measures well over two feet across, as compared with a little over two inches for the same part in a tortoise of about a foot in diameter. There is also part of the tooth of an elephant—the elephant was first identified in Palestine in evidence from the Bethlehem bone beds—and cheek teeth of the rhinoceros. Most important, however, from the view of the paleontologist and geologist is what appears to be a part of a leg bone of a very small form of horse, possibly hipparion, the three-toed horse of the Tertiary geological epoch.

In the same beds, and associated with these remains, were a number of worked flints of which a selection has been brought to England and is now available for examination by expert judges of man's earliest handiwork. There can, however, hardly be any doubt as to the human origin of these specimens. One of them appears to be a core, from which flakes have been struck, while the others show the characteristic forms and chipping found in eolithic or pre-palaeolithic implements. Of those who have seen them, J. Reid Moir, the great authority in Great Britain on pre-palaeolithic implements, is confident as to their human origin and their early form.

As regards their dating, until the base of the deposits at the bottom of the swallow hole has been reached, it will be impossible to speak with absolute certainty as to their origin, though even now there can be little doubt as to their great age. The species of the specimens found has not yet been determined, and until that has been done, it will not be possible to assign an exact dating in geological terms. There is every reason to say that at least the deposits are not later than Early Pleistocene, and it may be that they are Pliocene. This is cer-

tainly nearly as early as the earliest date assigned to the earliest implements found by Reid Moir in England, and approximately contemporary with Peking Man and Pithecanthropus, unless a Pliocene dating is proved, when it is earlier. For this half a million years might be regarded as a very moderate estimate.

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AVIATION

New Airplane De-Icers Approved By Air Commerce

THE new type airplane de-icing mechanism which substantially reduces the danger of rips has been approved by the U. S. Bureau of Air Commerce.

The device is an improvement on the well-known rubber "overshoes" on the leading edge of airplane wings and tail surfaces. These overshoes could be expanded and contracted by compressed air, breaking up ice formation so that the wind whistling over the wings could blow it away.

One trouble was that if a small hole developed in these rubber de-icers it might become enlarged and soon render the whole mechanism ineffective. The new improvement uses fabric reinforcing strips in the rubber covering which prevent rips from spreading beyond the limits set by the strip. Thus, small holes can become no larger and partial operation, at least, of the de-icer will be possible.

The B. F. Goodrich Rubber Company developed the de-icers in collaboration with the following government agencies: Bureau of Air Commerce, National Advisory Committee for Aeronautics, United States Army Air Corps, Naval Air Service. Cooperation with the commercial airlines was also employed.

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One-half of the shade trees of New England are elms.

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