Scientists BREAK DOWN NATURAL RESOURCES

By HARRY D. FRUEAUFF

Everyday we hear of the wonders of the present age. New revelations are disclosed in scientific circles covering a multitude of discoveries to aid man progress towards a fuller realization of civilization.

Every phase of human existence is being studied to promote ways of overcoming the frailities and unnecessary movements attached to our behavior, which tend to handicap us in our desire to lead a fuller life with less effort.

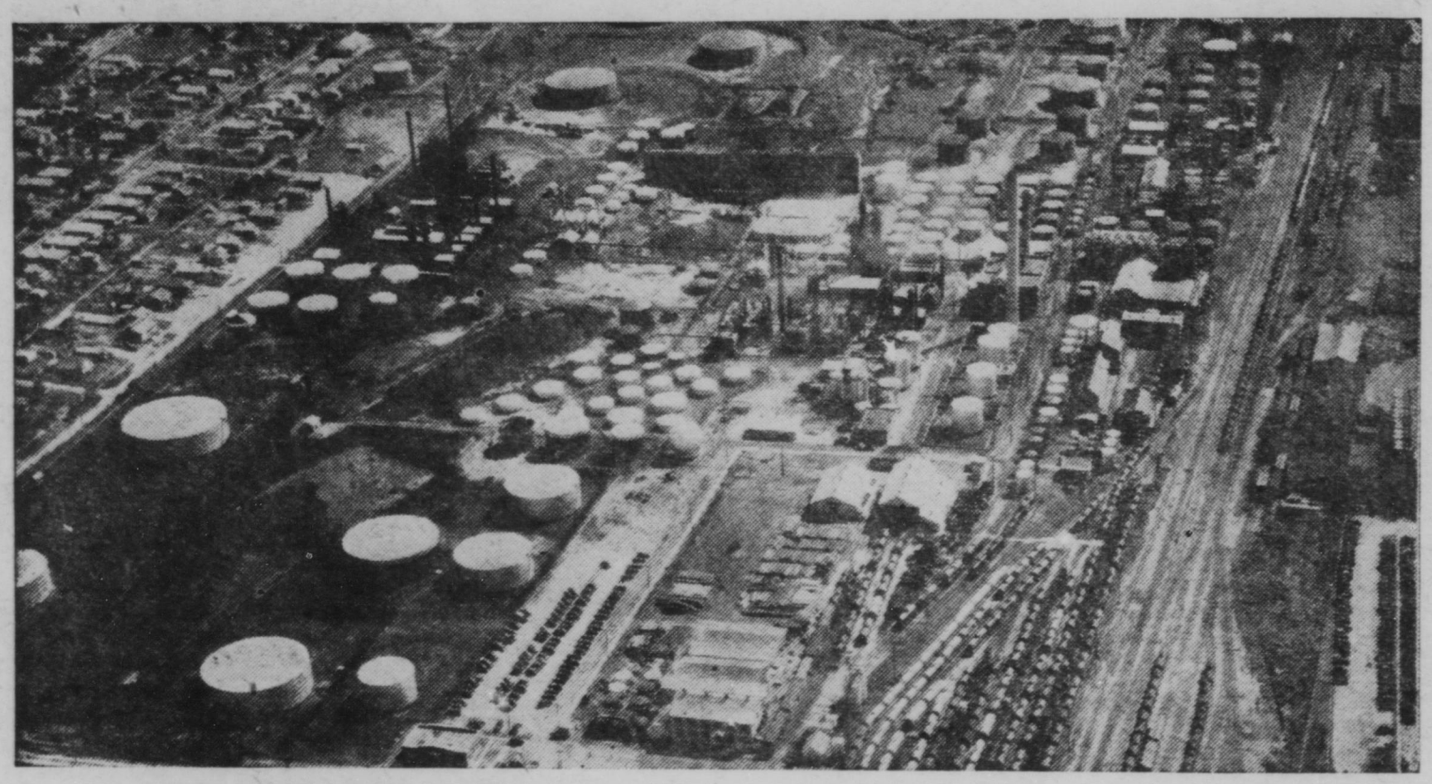
Today we hear of radio engineers working feverishly to complete the actual transmission of sound and scene at the same time. It may be a few years yet before we can actually sit in our living rooms and see the reproduction of a scene, just as you see it in the flesh, and hear them talk at the same time. With the guiding spirit of Senatore Guglielmo Marconi, the great Italian radio genius and actual inventor of the radio, we can look forward to the development of transmission of televised scenes within a short time.

In Japan, Dr. Tadasu Saiki, director of the Imperial Government Institute for Research in Nutrition, Tokio, has tapped an undreamed-of-wealth of food resources in "inedible" things—wild flowers, the leaves, stems and roots of weeds, and the waste portions of known foods the heads, bones, fins and internal organs of fish, and the peelings, leaves and stems of garden vegetables. Dr. Saiki's work is causing a revolution in Japan, and has opened the eyes of the outside world to the possibilities of utilizing waste portions of foods, and wild plants, in case of emergencies. Food consumption is being placed on a scientific basis. Cost is being reduced to less than five cents a day.

The time may not be far distant when conveyances will operate by remote control, from central points focusing right turns, left turns and forward march. But today we live in a mechanical age necessitating individual effort to operate our movements to get us where we wish to go.

In the short span of a quarter-century, the motor men of this country have done a remarkable job in transforming the automobile from an unreliable, sputtering conveyance to the powerful and dependable motor car of to-day. Even more remarkable is the manner in which they have improved cars while bringing down prices to make the automobile available to Mr. Average Man. To-day more than 28,000,000 cars are on the road and thousands more are being sold daily—practically all America will be living on wheels this summer. A signal tribute is due the automotive industry for its ingenuity and resourcefulness But hand in hand with automotive progress has come progress in the industry which supplies the fuel for automotive engines—the oil industry.

In this country are scores of closely-guarded laboratories where, behind locked doors, hundreds of research chemists move about in rooms crowded with complicated apparatus, automobile engines of various makes, hundreds of test tubes filled with mysterious ingredients and labeled with even more mysterious formulas. They toil ceaselessly, night and day, seeking to achieve better refining methods, better gasolenes and other oil products.



Giant Cities Service Oil Refinery at Ponca City, Oklahoma

Indefatigably and relentlessly, these chemists continue study and experimentation in the search to find the gasolene to achieve perfect performance in any and all types of motors, and in all climates.

No Jenner, Lister or Pasteur, men whose names will ring down through the ages for their discoveries in wiping out for all time dreaded scourges of mankind, worked with greater zeal and singleness of purpose than these unsung and unheard of chemists.

Almost like the realization of a Utopian dream, one group of chemists announced they believe they have discovered the long-hidden secret of making gasolene give perfect performance. Following years of research under the auspices of the Cities Service Power Prover, these chemists hold the answer lies in *hydrocarbons*.

To understand this more clearly, we will define the process. When a barrel of crude oil is run through a refinery, as heat is applied, it breaks down into a number of petroleum products. Chief of these products is gasolene—which is the first to be drawn off.

Now, gasolene itself is composed of many types of *hydrocarbons* which enjoy distinct characteristics of their own. Some of these hydrocarbons are independent fellows and have to be teamed up properly with other hydrocarbons or else they won't work at all when in an automotive engine. But, once they are teamed up the result is claimed to be astonishing.

So, it was the job of these research men to find out what *hydrocarbons* were not working—and why.

The first step was scrutinizing all the hydrocarbons. Chief of them are named butane, pentane, and hexane. It is a common practise of refiners to merely make straight-run and cracked gasolene and to mix them up for their final product. These research men went further—they wanted to know why any part didn't do its job. They broke down the gasolene into many fractions, each having a definite characteristic as to volatility and anti-knock. These fractions then were added together again in scientific proportions to give what these research men contend is the right measure of starting, acceleration, power and mileage and anti-knock performance.

When the teaming process was finally perfected by this group of chemists, and designated as New Koolmotor Bronze, figures released later for publication indicated that over a four-year period a million individual scientific tests were conducted under all types of climatic conditions, and on every make and model of motor car known in America.

According to the chemists who perfected the process, they studied carefully the gasolene performance in a million motor cars. It became apparent to them that many parts of gasolene were not proportioned correctly. That was the reason, they explained, why so much unburned gasolene was being blown through the exhaust pipe—why a car would not start quickly, or give the proper power or pep.

While these chemists believe they have found the solution to this hitherto unexplained mystery, the study and experimentation doesn't end. The advancement of all civilization is founded on constant improvement.