



**SPACE- AND TIME-SAVER**—Although both of these drawings tell the same story, use of streamlined drafting represented in the smaller blueprint is being encouraged.

## PHYSICS

## Exact Ozone Measurement

► **CHANGES** IN the amount of ozone in our atmosphere during the past 50 years are now being charted by William Hoover, astrophysicist at the Smithsonian Institution, Washington.

Accurate records of the amount of the sun's visible light received at high points around the globe have been kept for a 50-year period, and scientists are now going back over these old records to find variations in the amount of green and yellow light received.

This will give an accurate measurement of the amount of ozone in the atmosphere, since the ozone layer in the atmosphere stops about three percent of the yellow-green light coming from the sun.

This ozone layer, a sheet of deadly poisonous gas high above the earth, makes possible all life on earth by this absorption. Ozone, a three-atom-molecule oxygen, is the stuff one smells near an electrical discharge of any sort, such as lightning.

The ozone layer occupies a region between about 15 and 30 miles above the earth's surface. If this deadly gas were brought down to the surface at room temperature, it would make a sheet only about one-tenth of an inch thick.

A rip in this tissue-thin sheet, however, would have deadly consequences for living

things, for the ozone layer absorbs three bands of radiation from the sun. Most important, it shields the earth from the invisible ultraviolet rays, absorbing a great part of the sun's radiation with wavelengths shorter than 3,450 angstrom units. An angstrom unit is four billionths of an inch.

A limited amount of ultraviolet light is essential to keep the earth healthy. It kills germs, but if very much more penetrated the atmosphere it would kill about everything else as well.

The ozone layer also stops some yellow-green radiation, and it is the 50-year record of variations in this light that Smithsonian scientists are now using to trace changes in the ozone layer. No particular significance was attached to the variations at the time they were recorded.

Besides ultraviolet and some yellow-green radiation coming to the earth, the ozone layer stops some infrared, or heat radiation, coming from the earth itself. It may thus be a minor factor in keeping up the planet's temperature.

In general, Mr. Hoover states, the ozone layer is thick in spring and thin in autumn, thin over the equator and thick over the two poles.

Science News Letter, February 21, 1953

## ENGINEERING

## Blueprint Curlicues Go As Draftsmen Get Scarce

► "IF YOU can make it clear with one line, forget the fancy curlicues," draftsmen are being told these days at the General Electric Company, Schenectady, N. Y.

"Remember our slogan: 'A superfluous line is a waste of time.' In the light of the skilled manpower shortage, we can't afford to waste a minute. Knock out the non-essentials, and don't be afraid to throw in a little judicious free-hand work."

These revolutionary instructions to the shirt-sleeved men behind drawing boards produced immediate results. One blueprint formerly 57 square feet in area shriveled to four square feet. Nothing was sacrificed except extra views and lines that were not needed. The time needed to draw it dwindled from eight days to two.

Science News Letter, February 21, 1953

## PHYSIOLOGY

## Athletes Get Oxygen During Rest Periods

► **ATHLETES** AT the University of Pittsburgh, Pa., get oxygen during rest periods. The idea is not to "supercharge" them but to help them recover more quickly from fatigue. (See p. 117.)

As evidence of the help given by the oxygen, Dr. H. C. Carlson, director of student health at the University, reports the following results of tests he performed with members of the Pitt basketball squad:

Average pulse rate of group that breathed oxygen increased 45.4% compared to an increase of 73.9% in the group that breathed air. Average respiration rate of the oxygen group increased only 91.4% compared with 106% for the air breathers.

The oxygen was supplied through a mask attached to a compact, portable unit called the Vitalator, consisting of a refillable 40-cubic-foot oxygen cylinder mounted in a light frame with handle. It is made by Mine Safety Appliance Company, Pittsburgh.

Science News Letter, February 21, 1953

## ELECTRONICS

## Electronic "Brain" To Work Problems

► **GUIDED-MISSILE PROBLEMS** as well as brain twisters involving aircraft design and ballistics soon will be solved for the U. S. Air Force by an electronic calculator that can "remember" 10,000 ten-digit numbers.

The machine uses 1,400 electronic tubes and 7,000 germanium diodes. It is scheduled for "early shipment" to the Wright Air Development Center, Dayton, Ohio, from the General Electric Co. at Syracuse, N. Y., where final tests now are being run.

Science News Letter, February 21, 1953