MORE EFFICIENT TRANSISTORS—Newest entries in the transistor field are "tetrodes" and "pentodes." They have three and four wires, respectively, running from the germanium nugget, instead of two, and can do the work of two or three of the triodes shown here during assembly.

ELECTRONICS

Transistor Family Grows

➤ THE TINY transistor, a five-year-old newcomer to the electronics field, now has two baby brothers.

Transistors are made of a rare metal, germanium, which is worth more than gold when suitably refined for transistor use. The pea-sized devices can amplify radio waves, music and speech, and can do many other jobs done by tubes such as are now used in radio and television sets.

The newest transistors are "tetrodes" and "pentodes." They differ in appearance from their big brother, the "triode," only in that they have three and four wires, respectively, running from the germanium nugget instead of two. Tetrodes can do the work of two of the older triodes. In some cases a pentode will do the work of three triodes.

This means that someday radio and television sets may be fantastically small, partly because transistors themselves are small, and partly because the new transistors will simplify electronic circuits.

Developed by Sylvania Electric Products Inc., the new transistors may find their first jobs in electronic computers.

The devices are still in the development stage, as is the older triode transistor. As yet, they cannot be used in critical radar circuits. This is because transistor performance is not standardized. If a transistor goes bad in a critical circuit, another transistor usually cannot be substituted for it without a modification of the complete circuit.

However, transistors now are being used in some noncritical circuits of hearing aids. Future refinements should make them suitable to take over many of the jobs now done by vacuum tubes.

Science News Letter, August 1, 1953

INVENTION

Sampling Device For Drone Airplanes

➤ A "SNAP-SAMPLER" has been invented for drone airplanes that fly through radioactive clouds after atom bomb explosions. The device funnels air through a nozzle and traps a sample of the air and solid particles it contains in an air-tight bag inside the plane.

This is done in such a way that a representative sample of the cloud is collected in a suitable form for laboratory analysis.

The sampler was invented by Jerome Kohl of Berkeley, Elliott G. Reid of Palo Alto and Lloyd R. Zumwalt of Lafayette, Calif. The inventors assigned their patent, No. 2,645,940 to the Atomic Energy Commission.

Science News Letter, August 1, 1953

VITAL STATISTICS

Early School Years Show Highest Polio Death Rates

➤ THE HIGHEST death rates from polio have shifted from the pre-school to the early school ages, when the years 1930-42 are compared with 1948-52.

This is shown by figures compiled by Metropolitan Life Insurance Company statisticians.

The average death rate from acute poliomyelitis in the past five years was higher than that in any comparable period since the epidemic year 1916.

Science News Letter, August 1, 1953

ENTOMOLOGY

Monarch Butterfly Can Now Be Seen

See Front Cover

➤ THE MONARCH butterfly, *Danaus plexippus,* shown on the cover of this week's SCIENCE NEWS LETTER just emerged from its golden-spotted, jade-colored chrysalis, is one of the most common and handsome butterflies of American fields.

With the approach of winter, monarchs in the most northern states either die off or migrate in mass southward to hibernate. Adults appearing in these northern regions in June and July probably migrated there from the south. The butterfly is active all winter in the far south.

The monarch's caterpillar feeds exclusively on species of milk-weed; so the species is also known as the milk-weed butterfly.

Science News Letter, August 1, 1953

WILDLIFE

Fish Streams Poisoned By Drained-off Insecticide

➤ STREAMS CAN be made toxic to fish by drainage from fields treated with the insecticide, toxaphene, experiments by U.S. Public Health Service scientists in Cincinnati reveal.

Toxaphene washed into the streams with soil evidently is not made harmless by adsorption on the soil particles, nor is it effectively settled out of the water by sedimentation, Drs. Peter Doudoroff, Max Katz and Clarence M. Tarzwell of the PHS Environmental Health Center report.

Their experiments were carried out by placing small fish in aquaria into which samples of toxophene-treated soils and filtrates of the soils had been added.

In other experiments, in which different insecticide powders were added directly to aquarium water, toxaphene was found to be the most toxic to fish, with aldrin next. DDT and BHC insecticides both were much less toxic than the first two in these tests, the scientists report in *Sewage and Industrial Wastes* (July).

Science News Letter, August 1, 1953