

sands of pictures may have to be snapped before one of the trails is caught. This is why he made the process automatic. As a further improvement to his cloud chamber, Brett wants to add a counter that would trip the camera trigger before the vapor disperses.

## Classify Fossil Finds

Sonia Ruth Anderson, of Omaha, Nebr., and David Bachrach Adams of Neosho, Mo., are both lucky in that they live in regions where the upper layers of the rock formations are rich in traces of living creatures imbedded there millions of years ago.

Sonia, now a senior at Technical High School in Omaha, has been collecting Nebraska fossilized rocks ever since she was 10 years old. But the real labor began when she started to classify them. After it was accomplished, she found she had a neatly classified collection of over 42 eastern Nebraska fossils, found mostly along the Missouri River basin. Sonia also determined some of the organisms and conditions that existed there during past geologic ages. Her conclusions were that among others, gigantic turtles, camels and rhinoceroses must have existed in her neighborhood.

David, a senior at Neosho High School, found that the very hill on which he lived was a chert formation, full of fossil remains. From there and elsewhere he built up a collection of around 2,500 specimens and made it his project to identify and classify them. He found that there were very few descriptions of the local chert fauna in existence. David had to compare his specimens with descriptions of the fauna of that era in other parts of the country.

David concentrated his efforts on 10 species and one variety of *Neosho productidae*, a shell with two valves.

## Studies Low Organisms

► A KEEN desire to solve eventually problems that will end some of man's suffering has led 16-year-old Edward Jay Pollock to experiment with the living tissue of certain low organisms from which we derive much of our knowledge about wound healing.

This Niles (Ill.) Township High School senior gathered the 600 flatworms he needed for his research from the culverts in Schiller Park in Skokie, Ill. Small sections of individual worms have the capacity to grow heads, tails, or other missing parts, to become complete organisms again.

But, certain poisons are known to inhibit this trick of nature.

Edward chose to study the effect of the two chemicals, nitrogen mustard and maleic acid hydrazide, on the reconstitution of cut sections. He found that nitrogen mustard acted much faster but that both substances produced abnormalities, some of which were not classified before. Thus, he concluded, these substances can be added to the list of agents which affect growth.

## Tests Color Blindness

► MERRY A. MARGOLISH puts rearing a family at the top of her list of what she really would like to be doing 10 or 15 years from now. She also hopes to do medical research.

To help her place as a winner, Merry, of New Rochelle (N. Y.) High School, found an improved method for testing color blindness. From 200 different devices and methods now used, Merry chose and modified the standard "H.R.R. test," because she felt it was easy to administer.

Merry then devised an original color wheel and her own test forms which made the test even more simple to give and the results easier to tabulate.

From testing her fellow students, Merry tabulated over 40 cases of different types and degrees of color blindness. With some further testing planned, Merry expects her charts to show exactly what color confusions characterize each defect.

## Chromatography Expert

► YOUNG John Douglas Reichert, a senior at Stephen F. Austin High School in Austin, Texas, seems to know a great deal about chromatography, a system for analysis that causes a chemical to "paint" a picture of its composition on specially treated paper. He became so skilled that a university professor hired him to run the chromatograms for his research.

After experimenting, checking and counterchecking with a whole range of chemicals and several alloys, John satisfied himself that he had discovered a way of using the chromatographic process to show not only which, but also how much of a chemical was present in the solution tested. He then began to wonder whether, by making use of the electrographic process as well, and maybe by combining the two methods,

he might get even better results. John thinks he is on the track of discovering some really useful new method for inorganic analysis.

## Build Computer Systems

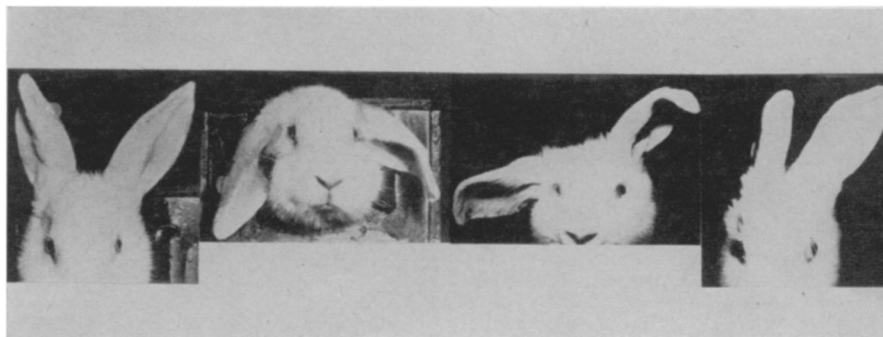
► AUTOMATION and electronic brains are popular these days. Charles Thomas Phillips, 16, from South Lincoln, Mass., and Philip Meade Ryan, 17, from Scarsdale, N. Y., have each built a computer system of his own design.

Charles, of Weston (Mass.) High School, designed an electronic adding circuit which uses relays and switches to analyze the symbols fed into the machine. An open circuit stands for "true," a closed one for "false." For the machine to add, numbers are translated into a binary system and recorded by a series of lights. When Charles found that his system was getting too complex and cumbersome, he hit on the idea of locking relays which permitted successive addition with fewer switches, a device which endows the machine with "memory."

Philip built his first digital computer during his junior year at Archbishop Stepinac High School in White Plains, N. Y. When thinking of a better model, Philip soon discarded the idea of merely building a big brother to his ELDIREC. With the help of some advanced algebra he had just learned he tried to figure out a number of different ways to make a machine do the work of a brain, in arithmetic.

His DIQUAC is all set to solve quadratic equations. His most difficult problem was to reduce the extraction of a square root to a series of simple repetitious operations each of which could be represented easily by a piece of electrical circuitry. The answers found by the machine are in binary numbers. These are converted into decimals by a system of relays and small telephone-type bulbs.

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**LABORATORY ACCIDENT**—Dr. Lewis Thomas of the New York University-Bellevue Medical School, in a study to find if the body can be protected against damage from certain enzymes, injected the enzyme papain from the green papaya into the veins of rabbits. Three or four hours later he was surprised to find that the rabbit's ears drooped like a spaniel's; left alone, the limp ears straightened up naturally in a few days. On investigation he found that something in the papain was dissolving out the cartilage matrix. He is now trying to isolate and identify that constituent of papain responsible for this effect as he feels many problems in cartilage chemistry can be explored by use of this laboratory tool.