run about $12 billion; by 1969 research expenditures should hit about $30.6 billion.

New consumer products can mean new types of pollutants. Considering this growth, 180 cities of 50,000 population or more already have, or can expect to have shortly, an air pollution problem that warrants year-round attention by full-time personnel.

Phoenix, Ariz., exemplifies the alert city looking toward the dawn of a new era. Phoenix expects a greater concentration of industry in the years ahead. It already is establishing zoning laws on the theory that advance planning is less costly than hindsight clean-up. These zoning laws are based on weather and geographic considerations, as well as permissible density of population and industry.

On the other hand, a city of 82,000 in Illinois lacks many basic measures that contribute to clean air. It fails to require use of even the inexpensive Ringelmann Chart which indicates the shade of smoke. This device permits observations of smoke plumes from coal-fired heating or power plants. The chart enables the user to determine the efficiency of combustion by the cleanliness of smoke.

Black smoke represents incomplete combustion, inefficiency, wasted fuel dollars. A simple adjustment can feed more air to the fire and minimize "fallout" from coal smoke. In Pittsburgh smoke clean-up is estimated to save each person $41 a year, largely because of better combustion.

Finding economical ways of dealing with the gaseous sulfur and nitrogen compounds is one of the top-drawer projects for researchers. Many of the compounds are relatively inert, making it difficult to trap them easily.

The U. S. Public Health Service has named the automobile as the biggest, single source of future widespread pollution. From the automobile come hydrocarbons that under certain weather and geographic conditions make eye-smarting smog and chemicals corrosive to metals. Up to 30% of these hydrocarbons escape from the car's fuel system—its carburetor float bowl, and fuel tank. Some escape from the crankcase, but most are spewed out the tailpipe.

Responding to growing pressure, automobile makers have stepped up research to produce three possible exhaust cleaners now in the prototype stage. One is a flame-type afterburner designed to kill "live" fuel leaving the engine. The second is a low-temperature catalytic converter designed to oxidize hydrocarbons. The third is a high-temperature catalytic converter. Reductions in hydrocarbon and carbon monoxide emissions achieved experimentally with these exhaust cleaners ran from 60% to 90%.

But eventual control even of all automobile exhaust gases does not mean the air pollution problems will be solved.

Experts believe our chief challenge today is to go after all sources with the many devices and controls now commercially available. The challenge, they say, is to develop new and better ways of eliminating pollutants. The challenge is to improve the air we breathe. At least we can "hold the line" so that it does not grow vastly worse.

Science News Letter, August 1, 1959

MEDICINE

Can Halt "Black Cancer"

VICTIMS OF "BLACK CANCER," can be rescued from one of the fastest of all cancer-killers by prompt treatment.

Black cancer is a synonym for malignant melanoma, one of the wildest and most rapidly fatal of all accessible cancers, Dr. Anita V. Figueredo of La Jolla, Calif., says.

Paradoxically, the great majority of these cancers are preventable through early and appropriate treatment, she explains.

This type of cancer represents two percent of all cancer cases. More than two-thirds of all melanomas arise in moles or birthmarks.

Any change in the size, color, consistency or behavior of a pigmented mole may be evidence of beginning malignancy. Thereupon, the entire area of the mole should be removed, she urges in the *Journal of the American Medical Women's Association* (June).

The condition calls for prompt treatment and total removal, the surgeon cautions. In recent years the five-year survival rates for victims of black cancer have fluctuated between 40% and 42%, lending hope to those patients who previously thought this type of cancer to be inevitably fatal.

Malignant melanoma has been surrounded for a long time with a special aura of doom. Statistics of survival have also been unfavorable, lending themselves to the general attitude currently held by most persons.

A more optimistic attitude might lead to quicker, more "curative" action on the part of the private practitioner, since a certain paralysis seems to accompany a feeling of inevitable failure, she adds.

Science News Letter, August 1, 1959

METEOROLOGY

Rename Discomfort Index

THIS SUMMER you have a chance to "do something about," not the weather, but the combination of heat and humidity that often makes so many persons so uncomfortable.

The Weather Bureau in June started experimentally in various cities throughout the country publishing for the summer what it then called the "Discomfort Index." The immediate results were cries of outraged indignity from citizens who thought their particular home towns were being maligned when the Discomfort Index hit high numbers.

So the Weather Bureau changed the name to "Temperature-Humidity Index." However, many radio and television weather reporters, to say nothing of the average citizen, find this a long and difficult-to-handle name. Therefore the Weather Bureau is welcoming suggested new names for the factor that indicates how humans react to the combination of heat and humidity.

Suggestions received thus far include such terms as Thermidity, Humi-Table, Weather Index, Broiling Point, Cooling Degree Index, Tole-Rate, Atmosfactor, Climature, Humiture, Thermosation and Fan Factor.

Besides a new and generally acceptable name for the Temperature-Humidity Index, the Weather Bureau would also like to learn how useful the index, whatever its name, is to the individual citizen.

Decision on the possible new name will be made by officials at the Weather Bureau, if they find one that most agree is acceptable.

Science News Letter, August 1, 1959

ENTOMOLOGY

Fabrics Insect-Proofed

IMMUNITY for fabrics against textile-destroying insects that cause millions of dollars damage annually to carpets, upholstery and clothes is promised in a new technique developed by Roy J. Pence, an entomologist at the University of California, Los Angeles.

A colorless, odorless, harmless (to humans) compound can be used to impregnate fabrics during the dye-vat process, rendering the material "indigestible" to carpet beetles, clothes moths and other insects.

It can also be applied in an aqueous solution to existing fabrics in the home.

The compound is one of a group of substances known as antimetabolites. Antimetabolite compounds are structurally similar to essential nutrients such as vitamins. Very slight differences in chemical structure are just enough to cause them to be "misfit" links in the insect's metabolic chain.

After the young insect ingests the vitamin "look-alike" it prevents him from utilizing the essential nutrient. (Vitamins in fabrics are supplied by spilled food and drink, skin secretions and other types of soiling.) As a result, a sort of beri-beri sets in, causing the insect to die of nutritional deficiency.

However, in some little-understood manner the mature insect recognizes the antimetabolite after the first or second "mouthful" and will leave impregnated material for "greener pastures" before any real damage is done.

Science News Letter, August 1, 1959