A GALLACKER

This North Carolina girl facing the morning sun is hunting galax leaves, laurel sprays, Leucothoe and other evergreens for Christmas decorations.

MEDICINE

Influenza And Colds Are Attacked From New Angle

Repeated Inoculations of Virus Are Followed By Changes in the Nasal Membranes of Animals

A NEW line of attack on the common cold and influenza is being made in the laboratories of the International Health Division of the Rockefeller Foundation.

The attack is centering on changes occurring in the nasal lining membranes during a cold or an attack of influenza —changes which may give you resistance or immunity to colds and 'flu and similar infections of nose, throat and other respiratory organs.

Drs. Thomas Francis, Jr., and C. H. Stuart-Harris have found such changes in nasal membranes of ferrets which received repeated inoculations of influenza virus.

If they could find a way to induce such changes by permanent alteration of human nasal linings, it might be possible to confer resistance to influenza and the common cold in man.

The changes in the ferret nasal membranes, described in the *Journal of Experimental Medicine,* (December) are changes not so much in the structure of the membranes as in their functioning. In the ferrets the changes result in complete resistance not only to the influenza virus itself but also to chemicals.

The immunity or resistance thus induced is entirely a matter of cell resistance and has nothing to do with immunity in the usual sense. The latter immunity depends on the existence in the blood of germ-fighting substances called antibodies.

Both mechanisms, antibody formation in the blood and changes in cells, probably interact to produce complete immunity to infection.

When the change in the nasal linings has once been induced, even after the resulting resistance has worn off and the animal is again susceptible to influenza, the nasal linings go through the change very rapidly when the next infection comes. These changes after the first one are so rapid that there are scarcely any symptoms of the infection that could be recognized as sickness.

Turning from ferrets to humans, the Rockefeller scientists want first to find out whether such changes occur naturally in human nasal linings during colds or influenza. Two other important questions to be answered are: (1) Can these changes be induced artificially, so as to give immunity to these ailments? (2) Would it be good from the physiological standpoint to induce such changes or would they interfere too much with the normal function of the nose?

Science News Letter, December 17, 1938

MEDICINE

Scientists Still Seek Perfect Anesthetic

GENERAL anesthetics have been used to produce pain-free oblivion during surgical operations for nearly 100 years, but the search for an ideal anesthetic still goes on in laboratories and operating rooms all over the world. Large numbers of chemicals have been tested for anesthetic properties, but, while some are better than others, none of them can be called perfect.

"A perfect general anesthetic," says Prof. V. E. Henderson of the University of Toronto, Can., Faculty of Medicine, "should produce not only absence of pain and loss of memory of the operation, but complete unconsciousness and such a deep depression of the central nervous system that painful stimuli do not produce any muscular reflexes and have as little effect as possible upon the respiratory, cardiac or other medullary reflex centers. It should further produce a state of very low tonus in muscles; complete relaxation of abdominal walls, as the surgeon puts it.

"It should produce its effect quickly without setting up undesired reflexes from the respiratory passages or elsewhere, and be free from direct stimulant effect on the basal ganglia when in low concentrations in the body. Its effects should pass off quickly and completely, leaving no indication of its action. Lastly, it should allow of the inhalation of adequate amounts of oxygen throughout its administration.

"No anesthetic has as yet fulfilled all these requirements."

Besides these effects on the body, the ideal anesthetic should have certain physical and chemical properties. It must have high solubility in lipoids as compared with its solubility in water. Lipoids are fatty substances found in the body. The ideal anesthetic must also

have high chemical stability in the body.

Summing up the situation before the royal Society of Canada recently, Prof. Henderson said:

"It is hard to see in what direction to turn in the search for an ideal general anesthetic."

Science News Letter, December 17, 1938

ORNITHOLOGY

Biologists Find a Way To Keep Starlings Away

But Architects, Clinging to Old Traditions, Fail to Adopt Their Suggestions, So Birds Annoy

STARLINGS are now moving from their summer and autumn roosts in street trees to the better shelter which the cornices and window ledges of buildings give them against winter weather. They will continue to befoul the fronts of the buildings and to bespatter sidewalks—and the hats of luckless pedestrians.

Means for discouraging starlings from roosting on building fronts have been worked out by scientists of the U. S. Biological Survey. They have been urgently recommended to architects, but the architects, both government and private, have blandly ignored the recommendations. And the starlings continue to clutter up the building fronts all winter long.

Simplest of the anti-roosting devices, and among the most effective, are what E. R. Kalmbach of the Biological Survey calls "slope boards." These are surfaces of wood, concrete, or other materials set at steep angles on top of the flat ledges, cornices, capitals and other architectural details where starlings like to roost. The birds can no more perch for the night on a 45-degree smooth surface than you could sleep on a mattress at that angle.

These starling-proof slopes could easily have been made part of the original architectural design of the new government buildings in Washington, as well as of private buildings everywhere. But the architects preferred to stick to the flat top surfaces of tradition.

In Washington, some slope boards have been installed, at greater expense, in a few places on the new buildings, where the starlings have done exactly what the biologists told the architects they would do. On one of the most imposing of the new edifices, the Archives Building, the starling pest had become so bad that electrically charged wires were strung, and these drove the pests away. But most of the buildings, here and elsewhere in the starling-infested parts of the country, are still unprotected.

Slope boards are by no means the only anti-starling devices which biologists are trying out. For older buildings, with more architectural curlicues around their upper parts, complete enclosure of the top story front in netting, of either wire or cordage, is recommended. Such netting is practically invisible from sidewalk level, on buildings tall enough to be favored as roosting places by the starlings.

The biologists are also trying out big cage-traps, placed in suburban spots where the birds gather in flocks for their final flight into the city, after feeding all day in the country. Poison baits have been tried but were found ineffectual: starlings are such omnivorous feeders that they would not take enough of any bait, however tempting, to get fatal doses.

It is not expected, or even desired, to wipe out the starling flocks altogether. The birds, though pests in the city, are useful destroyers of insects in the country during certain seasons. But it is hoped that means can be found to reduce their numbers, and above all, to discourage them from their misguided choice of winter roosting places.

Science News Letter, December 17, 1938

ENGINEERING

Steel Industry Keeps Young Through Research

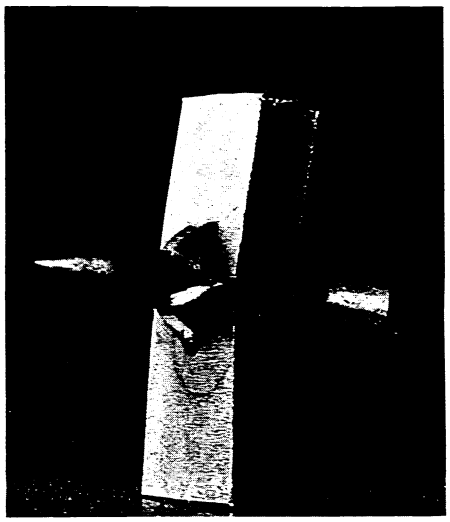
STEEL once was considered the oldster among industries which did not know that constant research is the secret of perpetual rejuvenation. A decade or more ago there was a certain amount of scorn among practical steel men for too much flavor of research scientist.

Now that attitude has changed and the industry has changed with it. Just one of the big steel concerns has some 86 laboratories that conduct research primarily or incidentally, spending a cool $1,800,000 annually in scientific searchings. U. S. Steel Corporation began its major fundamental research program on a large scale in 1928.

Evidently it is good business for steel as it is for other fields. Dr. Rufus E. Zimmerman, vice-president in charge of research and technology for U. S. Steel Corporation, feels sorry for any steel expert who retired, say, 25 years ago, and who would try a come-back. He would be embarrassed by the mere size of open hearths and blast furnaces, feel out of place in continuous mills, hot and cold rolling a multitude of flat products, and need an interpreter for the new steel lingo of "slag-metal equilibrium," "measured deoxidation," or "controlled grain size." Alloy steels, including the stainless varieties, produced in electric furnaces would puzzle him.

Off production lines at the rate of so many miles per hour come steel products that would have been minor miracles a few years ago. Take the shiny steel sheet that goes into a huge press and comes out the two sides and top of an automobile. Those several square yards of metal must not crack under the strain of the terrific stretching and must be flawless on the surface.

A thousand automobile parts must be identical twins, one with another. Each



A TEST

This steel plate, three-eighths inch thick, was pierced by a spike cut from the same plate. How? Because the spike after being cut and turned down to a point, was hardened by heat treatment. The test was made in the research laboratory of the U. S. Steel Corp.