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."

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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.

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ENGINEERING

Steel Industry Keeps Young Through Research

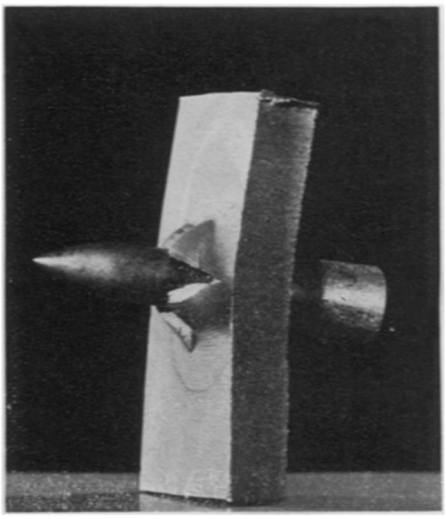
STEEL once was considered the oldster among industries which did not know that constant research is the secret of perpetual rejuvenation. A decade or more ago there was a certain amount of scorn among practical steel men for too much flavor of research scientist.

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.

must have the same desired grain size in order to harden the same way so as to act identically in the unrelenting rush of manufacturing and assembly.

Steel is even challenging the light metals, such as aluminum, in the airplane and streamlined train field. Stainless sheets as thin as 4/1000 inch and up to 190,000 pounds per square inch tensile strength are being produced that steel may do its share in speedy transportation.

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CHEMISTRY

Chemical Society Asks News Of Any Suppressed Patents

THE AMERICAN Chemical Society, through a notice to members under the signature of Dr. Charles L. Parsons, secretary, has asked its members to report to the Society any cases of patents suppressed to prevent their further development and commercial exploitation.

Referring to recurrent reports of such suppressions, Dr. Parsons declares "this matter of the suppression of patents is one of great importance to the American people, and if the rumors are true, they should be informed thereof."

Suppression of patents has been repeatedly charged in connection with several recent proposals that the U. S. patent laws be revised to make such a practice impossible and to correct other abuses with which the present patent system is charged.

"Such information," Dr. Parsons states, "to be effective, must of course be accompanied by definite statement in sufficient detail for presentation to any congressional committee on patents before whom a representative of this organization may appear."

Such information as is gained, it is intimated, will be used when the Society, in conjunction with a number of other technical groups, appears before the Congressional committees on patents to consider basic changes in the law which are expected to be introduced at the next session of Congress.

Sponsored by Representative William D. McFarlane, one bill would limit to five years the absolute monopoly now granted for 17 years. At the end of five years, if the patent holder has engaged in monopolistic practices or has refused to develop the patent to the stage of commercial application, compulsory licensing would occur. Determination of whether monopolistic practice or of suppression has been resorted to would be in the hands of a Patent Office agency.

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GENERAL SCIENCE

Wrong to Use Darwin's Ideas To Justify Aggression

Retiring Editor of Nature Calls Ideal of Conquest By Force a Reversion to the Law of the Jungle

DARWIN's evolutionary teaching, often cited in support of ruthless aggression and striving for power, is grossly misinterpreted when so used, declared Sir Richard Gregory, Bart., F. R. S., in a lecture in Washington, D. C.

"Evolution embodies the idea of social ethics and makes the welfare of the community the essential purpose of the life of the individual," he told his audience.

Sir Richard, for a great many years editor of the British science journal, *Nature,* gave the dedicatory address of the new Elihu Root Hall of the Carnegie Institution of Washington. The hall constitutes a memorial to the late American statesman, who was also a trustee of the Institution.

"Any nation or people which separates itself from the rest of the world in the name of race or religion, and cultivates ideals of conquest by force in order to assert its claims, is reverting to the law of the jungle and retarding the higher evolution of mankind," declared the speaker. He continued:

"The view that the sole function of science is the discovery and study of natural facts and principles without regard to the social implications of the knowledge gained, can no longer be maintained. It is being widely recognized that science cannot be divorced from ethics or rightly absolve itself from the human responsibilities in the application of its discoveries to destructive purposes in war or economic disturbances in times of peace.

"Men of science can no longer stand aside from the social and political questions involved in the structure which has been built up from the materials provided by them, and which their discoveries may be used to destroy. It is their duty to assist in the establishment of a rational harmonious social order out of the welter of human conflict into which the world has been thrown through the prostitution of the rich gifts with which they have endowed the human race."

In the course of his lecture, Sir Richard traced the history of the impact of scientific ideas on human beliefs and social behavior. The first well-developed science was astronomy, which reached a high state in Egypt and other nations of antiquity. Because of the supposed intimate connection between celestial bodies with divine beings, the religious implications of astronomy were developed very early and have been persistent.

When Copernicus laid the foundations of modern astronomical ideas, it seemed at first as though the very foundations of faith were cut away. Then came Newton, with his laws of the motions of the heavenly bodies.

"A great revolution of thought was involved in this substitution of permanent natural law for the conception of a world in which all events were believed to be reflections of the moods of a benign or angry God," said Sir Richard.

"The intellectual expansion thus brought about, together with the sense of justice which resulted from the existence and permanence of Law in Nature, profoundly influenced human thought and resulted in social changes which had the greatest civilizing effects.

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GENERAL SCIENCE

Photos of Sun and Moon Make Ceiling Decorations

See Front Cover

THE AUDITORIUM of the Carnegie Institution of Washington's new Elihu Root Hall is topped by ceiling transparencies made from spectroheliographs. These are shown on the front cover.

In the center, four feet across, is a combination of sun photographs, one taken with the violet light of calcium and showing the sunspots particularly well, and another taken with the red light of hydrogen showing the solar prominences.

The transparencies of the moon, each 20 inches in diameter, show the moon in eight phases.

All these photographs were originally taken at Mount Wilson Observatory.

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