

Galaxy

SCIENCE FICTION

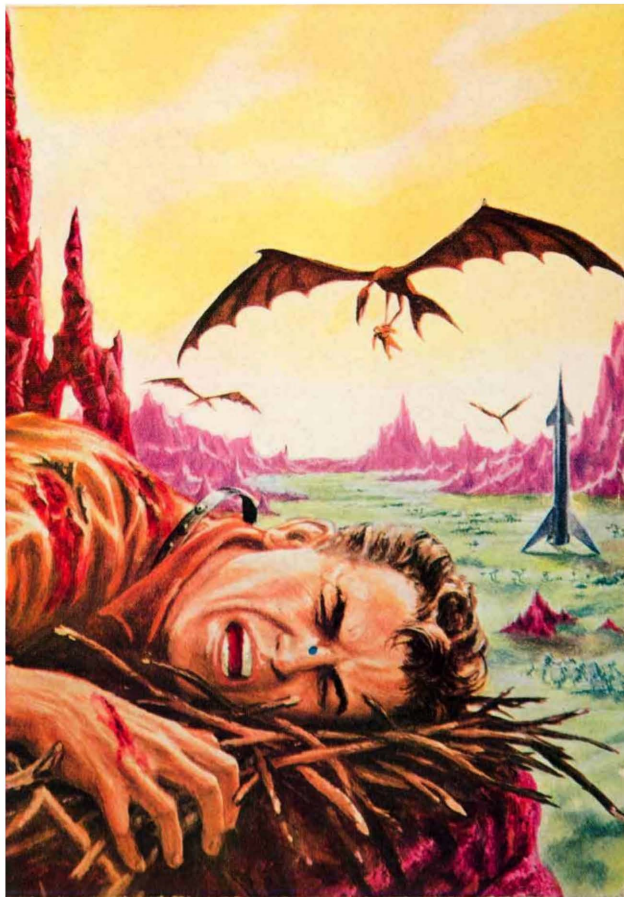
NOVEMBER 1956

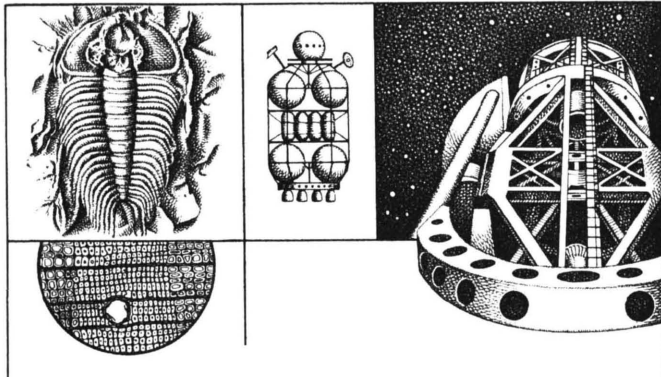
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The Man
Who Ate
the World
By
**FREDERIK
POHL**

•
NO LONGER
IMAGINARY
By
**WILLY
LEY**

•
Continuing
THE STARS
MY
DESTINATION
By
**ALFRED
BESTER**
AND
OTHER STORIES

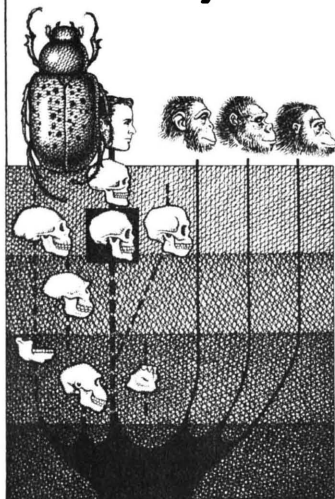




for your information

By **WILLY LEY**

**NO LONGER
IMAGINARY**



THE words which have to preface this column were written quite a number of years ago, namely around the year 1870. Their author was Jules Verne, but he did not write them for publication, for they occur in a letter he wrote to his father. In the original, they read: *Tout ce qu'un homme est capable d'imaginer, d'autres hommes seront capables de le réaliser*, which

translates as "everything one man is capable of imagining, other men will be capable of realizing."

In other words, Jules Verne took the position that the imagination of one man, namely the writer, will forecast the shape of things to come. It is too bad that he never wrote an essay on the rôle of science fiction. It would be interesting to see whether he would have analyzed his own contribution not just as something loosely called "imagination," but more precisely as what is now called "extrapolation." Because if you examine just Jules Verne's work carefully, you'll find that he was the extrapolator extraordinary and that his "imagination" was carefully directed into directions given by known facts.

I am not diverging from the theme myself when I tell that it happens quite often to me, usually before lectures, that local newspaper reporters, assigned to a routine interview, try to get some special color into it by asking for a little rundown on things "invented" by science fiction writers. By this they mean devices or machines described with reasonable accuracy first in a story and now reality.

The list of such inventions actually is much shorter than one should think at first glance and so, most of the time, a note of

disappointment creeps into the interview rather soon.

SO Jules Verne prophesied the long-range submarine, as everybody knows. In the process of describing its workings, he "invented" the periscope. Then I say: "Yes, and he named his fictional submarine *Nautilus* because that was the name that Robert Fulton had given to his small experimental submarine which he tried in the Seine River in France and which did not have a periscope."

I then want to go on and say that the first atomic submarine received the same name to honor both, but usually I don't get that far because I am interrupted by the surprised question: "You mean to say there actually were functioning subs before Jules Verne's time?" On one occasion, the reporter was so keenly disappointed that he threw this particular sheet of his notes into the wastepaper basket. This, to his mind, was no longer a story.

The fact is, of course, that it is the story.

The actual discovery of something new and, as a rule, the first model of a possible practical application of that discovery generally came from a scientist (or, in the past, a professional inventor who may be termed an "applied scientist").

What the writer like Jules Verne did was to see clearly before his mind's eye what the future of this invention could be. Being a writer, he told it in terms of fictional action. And to the reading public, the facts often became known through the fictionalized version first, so that the public acquired the habit of crediting the writer not only with the story but with the discovery, too.

Actually the scientists came first in the vast majority of all the cases, as was mentioned in this column a few months ago, with reference to cotnra-terrene matter. Ex-editor Sam Moskowitz discovered to his surprise recently that the spaceships of science fiction became rockets only *after* Goddard and Oberth had published their mathematical studies of propulsion in a vacuum.

(There are one and half exceptions to this statement. The Frenchman Achille Eyraud, in 1865, hit on a *moteur à réaction* for his ship and, thirty years later, the German Kurd Lasswitz "invented" a rocket-type propulsion mechanism which he called "repulsor." Lasswitz is the "half exception," for while he wrote about the device in a space-travel novel, he was a scientist in daily life.)

Keeping in mind that the writer, though he does the major

job of prophesying, usually gets the fundamental idea from the scientist, we can get down to cases. And I'll begin with the very rare and possibly unique case of one of these "prophets" who was essentially an artist rather than a writer. He happened to be a Frenchman, too; his name was Albert Robida and he was born in 1848. He had his *floruit*, as bibliographers like to put it, around 1882-1883, when he was about 35 years old.

AT that time, the electric telegraph was firmly established, but Heinrich Hertz had not yet discovered the waves at first named after him. Other inventions utilizing electric current had just been born.

Alexander Graham Bell received his patents in 1876 and 1877. In October, 1879, Thomas Alva Edison's electric lamp burned for the first time in his laboratory. Two years prior to that date, Edison had received the first patent for his phonograph.

Somebody who carefully followed the announcements about inventions — we know that Jules Verne did and can safely assume that Robida also did — could know that it was possible to speak over a wire and that sound could be recorded directly, without the detour via the written word. But



Robida's "spoken newspaper" on the breakfast table. Aside from the old-fashioned design, this looks "normal" to us

no commercial use was really in sight at the moment.

Robida thought of one: the "spoken newspaper" at breakfast time (Fig. 1.), the radio of today. Since the very term newspaper implied reporters, Robida invented the roving reporter complete with microphone (Fig. 2).

Two things are most interesting about this picture. One is the result of the knowledge of the time: The reporter's microphone is not a walkie-talkie, since radio waves were still unknown, so the reporter trails a cable. But Robida put a "magic eye" in his other hand — we would call it a TV camera. Robida must have reasoned by analogy that if sound could be both transmitted and recorded and a picture could be

recorded (professional and amateur photographers already numbered many thousands in his day), it seemed likely that a picture might be transmitted, too, in some manner.

As if this single item in the picture of the reporter might not be enough to establish him as the prophet of television with posterity, Robida did portray television in the home (Fig. 3), not quite in a form which is now in use, but close enough to it to eliminate all argument.

It is always said that the tank is an invention of H. G. Wells and was born with his story *The Land Ironclads*, first published in the December, 1903, issue of *The Strand Magazine*. But one can make a strong case for Ro-

bida, who had tanklike war machines in 1883 (Fig. 4). The one thing against the claim for Robida is that his "tanks" still ran on rails.

There are precisely 20 years between Robida's engines and Wells' "land ironclads." But precisely ten years after the one and ten years prior to the other, namely in 1893, Mr. Frank Reade, Jr., had a tank (Fig. 5) which not only did not need rails, but was even amphibious!

THE next case is one I unfortunately cannot illustrate; it is, to my knowledge, the



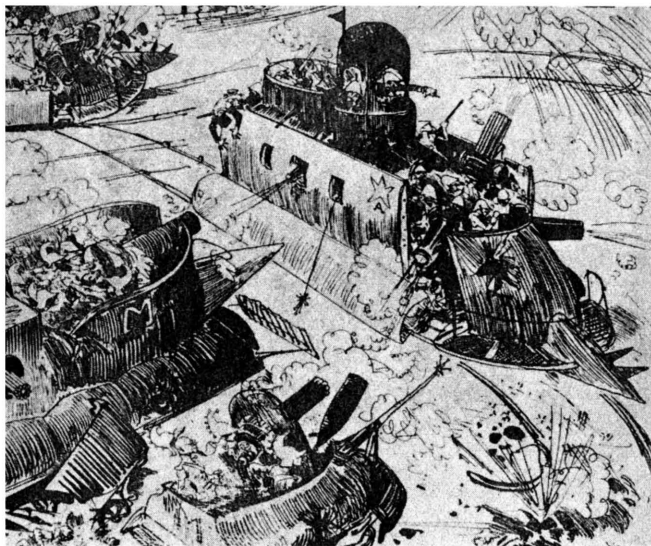
Robida's roving reporter, trailing wires for sound and picture



Remote entertainment de luxe in the home, according to Robida

first air-to-air missile. It appeared on the cover of a German pulp magazine around 1909 or early 1910. I cannot illustrate it for the simple reason that I could not find files of that old magazine (more accurately, "dime novel") in a library.

As I remember the cover, this missile bore a surprising resemblance to the German Henschel Hs-293 air-to-ground missile of



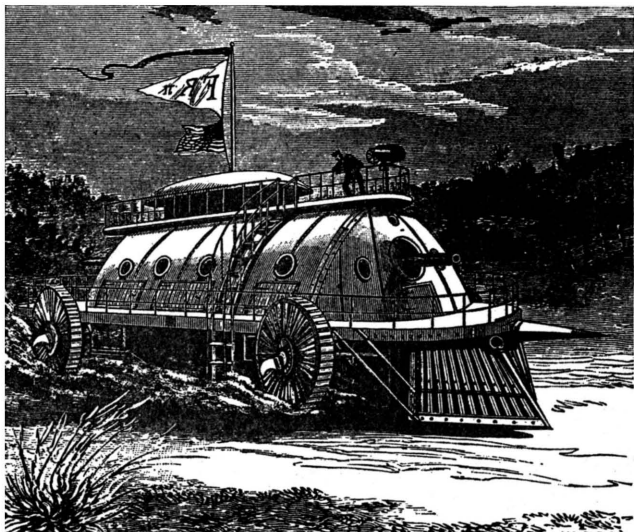
Robida's guess at either the tank or the armored train

the Second World War, but I don't dare to go so far as to print a picture of the Hs-293 and say that this was drawn for the first time in 1909. But I am certain about the story background for the cover painting.

From 1909 till 1914, somebody in Germany wrote science fiction dime novels with the overall title "Captain Mors, Pirate of the Air." Of course, you understand that this Captain Mors was a very benevolent pirate who took from

the rich to support the poor.

He made his first appearance with a zeppelin-type airship of astonishing capabilities and declared himself Master of the Air, not permitting anybody else to fly. (Later, after he had built himself an even more astonishing spaceship, he relented somewhat and let others share the air with him.) But at the period when he was still objecting to other people's airships, these other people banded together to blast



The tank, according to Frank Reade, Jr.

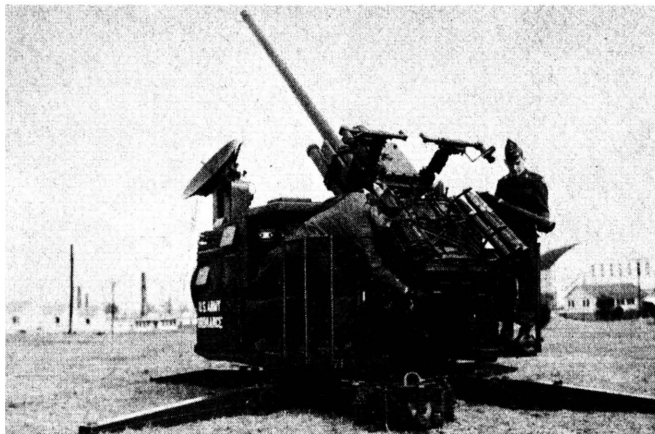
him out of the air.

English, French and Belgian airships attack his ship directly with cannon and machine guns and are easily defeated. But while Captain Mors is occupied in this manner, the Russian airship climbs to a higher altitude so far away that there cannot be any menace from the Russian ship as far as airborne artillery goes.

But the Russians do not carry artillery—they release air-to-air missiles! Captain Mors can save

his ship and his skin only by superior speed and frantic and skillful maneuvering.

Even here, though, the author of the story (who wrote anonymously) and his illustrator (equally anonymous) probably received the germ of the idea from practical science. Early in the present century, a Swedish artillery officer, Baron von Unge, had tried to re-introduce the war rocket, first as a ground-to-ground weapon like howitzers. When that



The 75-millimeter Skysweeper automatic cannon which combines radar, flight-track computer and rapid-fire gun

(U. S. Army Photograph)

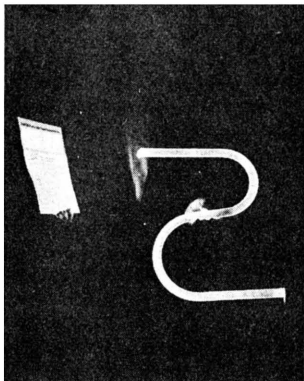
did not work out too well, he argued that rocket-propelled missiles were the ideal weapons for airships to use against other airships, since both the weight and the recoil of cannon were lacking.

(Note in passing: An American airship inventor, General Thayer, had made it a point that the cannon of his airship should fire in the direction of the tail end of the ship, so that their recoil would aid in the propulsion of the ship.)

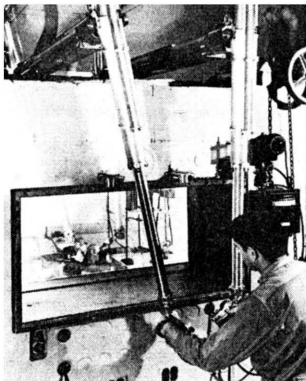
The idea of the air-to-air missile had been conceived by the Baron von Unge, but von Unge had unwinged rockets in mind.

The anonymous author described (and his illustrator drew) a winged missile which, I seem to remember, was even controlled from the mother ship in some manner. This was evidently a "shot in the dark" which happened to hit.

OTHERS of the kind were yet to come. The science fiction writers of the 1920s were obviously under the influence of the First World War, which had just ended. They wrote tirelessly about future wars and, by inventing a large number of future weapons, they did come up with



Piping light in complete darkness to illuminate a document
(Courtesy E. I. du Pont de Nemours)



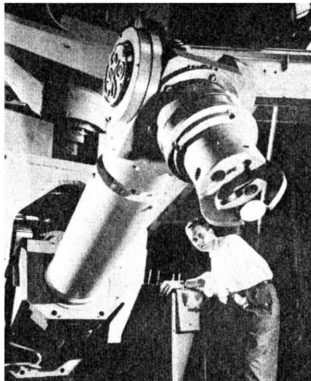
"Manipulators" at work in a contaminated area. The observation is direct through a radiation-proof window
(Oak Ridge National Laboratory)

a few that later became reality. There was a story, for example, in which one side had auto-

matic artillery which aimed itself at the targets and fired at a rate then equaled only by machine

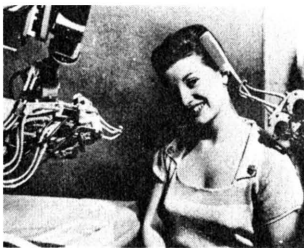


Same type of "manipulators," but observation is by means of television. The double image on the screen becomes a three-dimensional picture when viewed through polarized spectacles
(Oak Ridge National Laboratory)

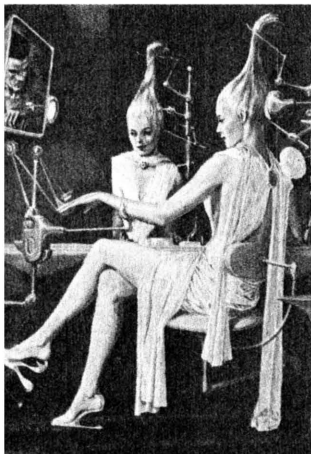


**Mechanical arm developed by General Electric is powerful enough to twist an iron bar.
But it can also move a raw egg around**

(Courtesy General Electric)



The "Yes-Man" beautician at work . . . and some readers felt our January, 1955, cover too fantastic even for science fiction!



guns. All the gunners had to do was to see to it that the shell-feeding mechanism functioned properly. There is now such a gun (Fig. 6), the Skysweeper.

I have been told that the man who originally wrote the Buck Rogers stories and invented the character made a rather good forecast of the Bazooka in one of his stories. Since I haven't read the story myself, I can only report this as hearsay.

Of course Dr. E. E. Smith can take credit for having predicted radar, with the "detector screens driven with the utmost power." While he did not describe just how the detector screens worked, the similarity between what they were supposed to do and what radar really does is striking.

At one time during the last phase of the Second World War — between VE Day and VJ Day — I loaned a boxful of magazines to somebody who wanted to know what science fiction was. When the magazines were returned to me, there was a long evening of discussion and one of the questions that came up was: "Do you know why Dr. Smith did not say 'radar' when he described the detector screens? Radar is a much better word." Well, I did know.

Now I can't say whether the detector screens were one of these "shots in the dark" or whether Dr.

Smith did go by a prior announcement from scientific sources. I don't *think* he did, but he *could* have. About 1906, Guglielmo Marconi delivered a lecture on radio waves and their transmission. He made reference to the fact that radio waves are reflected by solid objects and said that this characteristic might be used, one day, "to detect obstacles at sea either in darkness or in bad weather."

Yes, this lecture was printed; otherwise I wouldn't know about it myself, for when it was originally delivered, I was getting ready to be born.

A VERY typical "shot in the dark" was the repeated mention of unbreakable glass in many stories. That there would be such glass at some time seemed logical. Now we have not one but two substances which fit the label. The one is actually a type of glass, virtually unbreakable. The other is transparent plastic, best known under its trade name of lucite.

Lucite has a strange characteristic which would have made wonderful story material if it had been foreseen. It can be used to "pipe light" around corners (Fig. 7) and the fact that the light-piping rod in the picture is visible at all is due to an "imperfection." If it had an absolutely smooth

surface, no light would emerge through the sides; the rod would look dark with only a beam coming out of its end.

How science fiction forecast the atomic bomb has been told and retold so many times that I would not even mention it here if it weren't for one thing—namely, the people who tell the story do not seem to be acquainted with the story in which atomic bombs and atomic artillery appeared for really the first time.

I can't recall the name of the author, but the title of the story was *The Final War* and it appeared in one of Hugo Gernsback's magazines. The bombs and shells that end the war are not only "atomic" in the amount of destruction they cause; at one point earlier in the story, an investigator makes specific reference to the "nuclei"—something which was not very meaningful to the readers.

To end on a peaceful note, one of the neatest predictions ever to come out of science fiction is Heinlein's "waldos." If you have read the story, you'll remember that the hero is suffering from extreme muscular weakness of such a pronounced type that he lives on an artificial satellite in free fall around the Earth. To do things, he relies on an invention of his own. He slips his hands

into something resembling a pair of gloves and, elsewhere, duplicate hands of different sizes and strengths do with force what the weak hands of the inventor feebly direct.

These "waldos" are with us in considerable number. The first ones I know of were developed for the Atomic Energy Commission for the remote handling of radioactive materials; they received the somewhat stiff name of "manipulators." To make it easy to learn to handle them, they usually have a "1 to 1 power translation." In other words, the mechanical hand inside the radioactive area exerts the same pressure as the operator's real hand on the outside. If you press strongly enough to crush a beaker directly in your hand—not really a recommended procedure—the mechanical hand will crush it, too. But there are mechanical arms in which the power can be stepped up.

THE latest wrinkle in the series of "remote hands" is something that General Electric has named "Yes-Man." At one end there is the "master," a kind of harness with elbows, wrists, hands and fingers.

The "master" is worn by the real master, namely the operator.

At the other end there is the "slave," which is a set of me-

chanical arms with elbows, wrists, hands and fingers.

"Yes-Man" slave does what the master does. It does not even have to be near. The "master" could be directed in New York and the "slave" could perform in Boston. Moreover, there could be "slaves" in Chicago, San Francisco, Hollywood and Palm Beach all doing what the "master in New York is doing."

This, Moscow may say, is what Wall Street always wanted. Seriously, the "Yes-Man" is also designed to work in either radioactive or otherwise unhealthy areas. It could be used in a room which is filled with live steam 600 degrees hot. It could perform in a room where a container filled with a poisonous gas has burst. It could be used to de-fuze a shell or bomb. And since there could be hundreds of slaves hooked up to one master, it might be used in some instances for assembly operations requiring long practice.

So far, all this has been pretty serious. The ending in a lighter vein was created, or at least unveiled, just a few days before I started writing the column for this issue.

Remember the Liquor Organ which was such an essential ingredient in a series of Kuttner stories? Well, it now exists. There now *is* a mechanical bartender where you only have to push a few buttons—I am told that the combinations are easy to learn—to get the drink you want in the mixture ratio you prefer. All you have to do, in addition to pushing buttons, is to see that the attachments which hold the bottles do hold bottles with something in them.

But there is a drawback to everything.

The thing costs four thousand dollars, which makes it one of the cases where human help is decidedly cheaper.

—WILLY LEY

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