

"Gates, doors, furniture, the woodwork of the houses were thrown together to be burned," he writes, "and the basalt sculptures were broken to pieces or mutilated, the surface of all stone objects and wall slabs suffering badly from the heat of the violent fire."

So fiercely were some mud-brick buildings burned that they were left hard as stone, requiring pick-ax blades to remove fallen sections.

Several hundred arrows found by the archaeologists in one building are relics of the battle, says Dr. Ingholt, in which Hamath lost her independence in 720 B.C.

Revealing elegance of the old city, are inlay pieces for decorating furniture, such as ivory plaques representing flowers, fighting sphinxes, and bulls, still carrying traces of decoration with gold leaf. It was against such luxuries in Syria and Palestine that Bible prophet Amos preached, denouncing those "that lie upon beds of ivory."

The excavations have brought to light the citadel and official buildings, and such devices as stone lions that guarded entrances—not for decoration, explains Dr. Ingholt, but because the people thought the lions had real magic power to stop or destroy an enemy.

While these ruins represent Hamath at the peak of its power, they are only one of 12 levels of civilization which the Danes have explored on the site. Probing deep into the mound filled with successive ruins, the archaeologists traced the ancient career of Hamath beyond 4000 B.C.

Following its terrible fate at the hands of Assyrian King Sargon, Hamath was rebuilt in a smaller way in the Hellenistic era, but mostly below the prominence of the mound. The historic mound today is on the edge of modern Hama, Syrian town of 40,000 people.

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PHYSICS

New Invention Will Detect Airplanes by Invisible Rays

Radio Corporation Given Rights To Device for Making Visible Image From Heat of Plane's Exhaust

LAATEST addition to the long list of recent inventions for detecting airplanes by invisible waves is one which, the inventor claims, will even operate through fog.

Irving Wolff, of Merchantville, N. J., invented the new device, which was granted patent 2,234,328. He assigned his rights to the Radio Corporation of America, which holds the rights on most of the similar inventions patented in recent months.

Infra-red rays are emitted from the engine of a plane, as well as from its cloud of exhaust gases, or from the smokestacks of a ship. These are waves like those of light, but too long to affect the human eye.

"Instruments are now available, using photoelectric principles, for observing an invisible body radiating waves of a length slightly longer than light waves," declares Mr. Wolff in his patent specifications. "Such instruments will not operate where fog is interposed between the radiating body and the instrument, because the photoelectric means is not responsive to wave lengths which will penetrate fog."

With his new invention, he states, it is possible to detect "the existence of an invisible body radiating heat," and also "to produce a visible image of the original heat-radiating body." It may be used, he continues, "to detect the presence of an aircraft which is invisible to the eye because of fog." He suggests that it could be used for guiding aircraft

to a landing in fog "by visible indications from desired points which are produced by devices radiating heat." In such an application, the airplane would be equipped with the device, permitting the pilot to see the special infra-red beacons on the field which would outline the runways.

In operation of Mr. Wolff's invention, the heat rays fall on a diaphragm, which is one plate of an electrical condenser. The heat rays distort the diaphragm, and the capacity of the condenser is changed. In the condenser microphone, formerly widely used in broadcasting, a similar idea was used, only the sound vibrations in the air distorted the diaphragm.

A bank of such condenser units, at one end of a vacuum tube, is used. These are sprayed by a stream of electrons. An infra-red transmitting lens, not of glass, or a concave mirror, focusses the heat ray image on them. Adjustment is made so that, when the electron beam falls on the other end of a unit where infra-red rays are falling, still more electrons are given off.

In one form of his invention, these are directed to a fluorescent screen at the other end of the tube. Here the electrons are turned into light, and there appears a light picture of a heat ray image formed on the receiving end.

The individual condenser units correspond to the dots in a half-tone newspaper picture. The more there are, the greater is the detail with which the view is reproduced.

In another arrangement, the picture appears on a separate tube, just as with a television receiver. This viewing tube may be some distance away.

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● RADIO

Dr. Peter Debye, of Cornell University, will discuss "Probing Matter with Electrons" as guest scientist with Watson Davis, director of Science Service, on "Adventures in Science," over the coast to coast network of the Columbia Broadcasting System, Thursday, April 3, 3:45 p.m. EST, 2:45 CST, 1:45 MST, 12:45 PST. Listen in on your local station. Listen in each Thursday.

