

mine where rain shall fall, much as the vasomotor system controls the distribution of the arterial blood to the various organs. If the rain falls on mountains or a high plateau the water runs back to the sea with a force that can be used to turn mill wheels or produce hydroelectric power. Such streams from high levels are analogous to the venous blood streams from muscles in good tone.

Sluggish Streams

"If on the contrary the rain falls on a swamp at sea level or other low ground the stream back to the sea is sluggish. Similarly when the tone of all the muscles in the body is low the venous stream to the heart is sluggish. And because of the diminished venous supply to the heart the volume pumped by the heart into the arteries is diminished and the entire circulation is depressed.

"It is not merely by positive pressure that muscle tone promotes the flow of blood to the right heart. The negative pressure in the chest, which draws the venous stream toward the heart, likewise varies with the tone of the thoracic muscles. After surgical operations and anesthesia involving even a slight degree of depression of vitality, or shock, the tone of the diaphragm is decreased, and because of the relaxation of this muscle the so-called vital capacity of the lungs is diminished. In cases of considerable depression a partial atelectasis, or even a massive collapse of the lung, may develop. This relaxation of the diaphragm, established by X-ray observations, first suggested to us the relation of muscle tone to the circulation."

Science News Letter, April 28, 1934

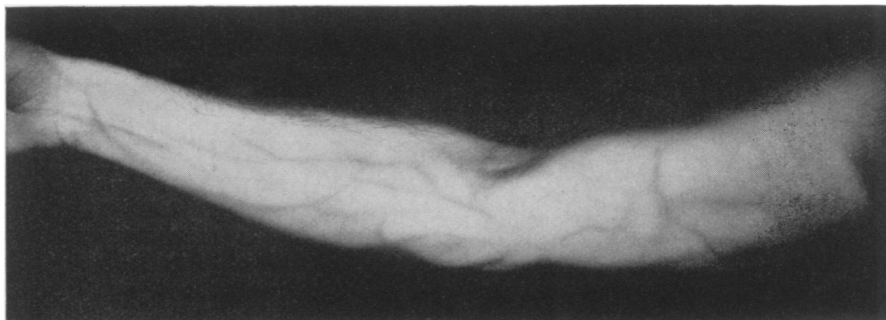
PHOTOGRAPHY—MEDICINE

Infrared Photographs Aid in Diagnosis

PHOTOGRAPHS taken through the skin by means of the invisible infrared rays of the spectrum are now helping physicians to detect varicose veins and obstructed veins. They are expected to prove even more valuable in determining the success of treatment in these conditions.

Examples of this type of photography were displayed by the Eastman Kodak Company at the meeting of the Western New York Society of Radiographers.

Pictures taken with photographic plates not sensitive to infrared rays show the skin approximately as the eye sees it. But when infrared-sensitive plates



LOOKING BELOW THE SKIN

Infrared light photography, which has formerly served the navigator by piercing fog, now aids the physician in diagnosing ailments of the veins and other blood vessels below the surface of the human skin. The skin is somewhat transparent to infrared rays, but the flesh beneath reflects them in greater intensity where there are no blood vessels than where these are present. No diseased condition is present in the arm shown.

are used, a very distinct pattern of the veins under the skin appears in the finished picture. On this type of photograph physicians can see varicose veins or obstructed veins, when they are present, and can watch directly the effect of treatment by taking more of these infrared photographs during the course of treatment.

The results with infrared-sensitive photographic plates are due to the fact that the skin is somewhat transparent to these rays. As they penetrate the skin and the tissues just beneath it, they become scattered and are reflected back to be picked up by the lens of the camera. Where there are blood vessels

just below the skin, near the surface, the intensity of the rays reflected back is less than in the parts where there are no blood vessels. The superficial veins, therefore, show up in contrast to the rest of the flesh, looking on the finished picture as if they had been traced with a heavy pencil.

The infrared-sensitive photographic plates now being used in medical diagnosis have previously been used to take pictures in darkness, at great distances (331 miles), for important astronomical observations, and is used in the "fog navigation camera" aboard the Steamship Manhattan.

Science News Letter, April 28, 1934

PALEONTOLOGY

Fossils of Shark Found In Pennsylvania Rocks

SHARKS SWAM in fresh water near the site of Philadelphia, back in the days of the dinosaurs. That these usually salt-water fish should have lived in a habitat commonly thought of as alien to them is not really paradoxical, however, Dr. William L. Bryant, director of the Park Museum in Providence, R. I., told the American Philosophical Society. Sharks and their relatives ascend rivers far from the sea; and there is a fresh-water shark species still in existence in Lake Nicaragua.

These ancient Pennsylvania fresh-water sharks have been found in rocks that contain also the remains of an undoubted fresh-water fish of a higher order, and also fossils of land plants and dinosaur footprints. The formation belongs to the Triassic geologic period,

of an antiquity estimated at approximately 180 million years.

At the same session, Prof. Glenn L. Jepsen of Princeton University told of a strange little fossil animal from the rocks of South Dakota, that lived in Oligocene times perhaps 50 million years ago, when the leading citizens of that region were the enormous rhinoceros-like Titanotheres. This small beast belongs to a mixed group of extinct mammals that have been classified sometimes with the lowest of the monkey-like animals, sometimes with the moles and shrews. As a result of its discovery it has been necessary to re-examine all the related fossils and rearrange their classification. This work involved extensive use of X-ray photography.

Science News Letter, April 28, 1934