weapons, have been unearthed. Opposite the Romans lay one Sassanian with his hand still raised and his sword near him.

"European scholars call Dura the Pompeii of the Euphrates," said Dr. Rostovtzeff, "and it deserves this name."

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METEOROLOGY

# May Base Long-Range Weather Forecasting on Sea Warmth

POSSIBLE use of ocean temperatures, in conjunction with other factors, in forecasting air temperatures and precipitation along the middle and northern Atlantic seaboard has been suggested by Dr. Charles F. Brooks, director of the Blue Hill Meteorological Observatory of Harvard University, and Ernest M. Harwood of the Blue Hill research staff.

"It seems possible," says Dr. Brooks, "that the coastal waters may give indications of the air-temperatures of the following month along the Middle and North Atlantic seaboard, low sea-temperatures being followed by high air-temperatures, and vice versa. Furthermore it seems likely that the precipitation stands in inverse relationship to the general sea-temperature of the preceding month."

The data studied covered a five-year period during which sea temperatures were recorded on sea-water thermographs installed on commercial steamships in the western Atlantic, chiefly those sailing between New York and Bermuda. The land temperature and precipitation recordings were made at Boston and Baltimore, Md.

"The sea should have both a direct and an indirect influence on the coastal weather. The direct one should simply make the coast warmer and moister, when winds blow onshore off a sea warmer than usual, and vice versa," Dr. Brooks says.

The indirect effect works through the changes in general atmospheric pressure-distribution favored by departures of sea-temperature. When the sea is above normal in temperature it will not only heat the air but will also give it more vapor than usual. Such heated and humidified air is lighter than the average, and so the atmospheric pressure is lower. The lower pressure over the sea favors northerly land-winds, both cool and dry, on the coasts to the northwest. So a warm sea should favor subnormal temperature and precipitation, Dr. Brooks believes.

Conversely, with sea-temperature below normal the air would be denser, the pressure higher, and the wind consequently onshore from the south, bringing warmer and moister weather to the coasts. On the Atlantic seaboard, where the winds are prevailingly offshore, the direct influence must obviously be minor, therefore, the indirect should dominate.

"The sequences of departures of weather and sea-temperature do not show any striking opposition, so we cannot say that the problem of seasonal weather-forecasting from ocean-temperatures is solved," Dr. Brooks warns. "On closer examination, however, the expected inverse relationship is found to predominate rather consistently."

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PHYSICS

## Two Automatic Instruments Facilitate Light Analysis

EXPECTED to be of tremendous assistance in the analysis of light, two new instruments are being developed at the Massachusetts Institute of Technology by Prof. George R. Harrison, director of the spectroscopy laboratory. Light analysis, or spectral analysis, is one of the most powerful of modern scientific weapons.

One of Prof. Harrison's instruments automatically measures and computes the wavelengths of spectrum lines, which are the separate bands that appear when a beam of white light is spread out by a prism or grating into an artificial rainbow. The other instrument, called an interval sorter, determines the energy of atoms and molecules from the spacing of these spectrum lines.

In measuring a spectrum by previous methods, the scientist observed by eye the distances of the spectrum lines from some standard line, using a delicate machine known as a comparator. For a spectrum photograph containing many of these lines the task might easily require days or even weeks. To avoid errors caused by temperature changes in the mechanism, each plate had to be measured several times and the results reduced by complex calculations.

Although the new machine for measuring wavelengths is still in the process of development, it makes measurements twenty times faster than by the conventional methods, and the results are twice as accurate. Further development is expected to make it 200 times faster than the old method. A beam of light supplants the human eye in recording the measurements by means of a photoelectric hookup. (*Turn Page*)