refer to this as a miracle.

In the local museum reconstruction drawings of sections of the Monastery by the monks have been framed. These are the working models.

As soon as hostilities ceased, the rebuilding of the Monastery at Monte Cassino began. Five years later considerable progress has been made, but it will require perhaps 20 years to complete the restoration.

Those who work on this project, including monks, stone masons and craftsmen, are discovering the romance of modern archaeology.

Science News Letter, September 30, 1950

CHEMISTRY

Alkali in Fine Varnish

The silicon in the varnish used by Stradivarius came from wood ashes. Now the secret of the "lost art" is solved, and this fine varnish can be duplicated.

➤ ALKALI extracted from wood ashes is part of the "lost art" of making old Italian varnish used centuries ago by Stradivarius, the Amati and other famous violin makers, Joseph Michelman of Cincinnati, Ohio, discovered.

Following this method, Mr. Michelman has been able to recreate a varnish similar both in appearance and chemical composition to the old Italian varnishes.

Through spectrographic analyses of samples of the old varnishes, made with the aid of Alan Goldblatt of Chicago, Mr. Michelman had previously discovered the principal elements in the brown varnish. These were aluminum, iron, silicon, sodium, calcium, magnesium, lead and manganese, in the order named. Aluminum, iron and silicon were present in all 12 specimens of brown varnish analyzed.

The "unexpected and constant appearance of silicon was perplexing," Mr. Michelman states.

He could account for the presence of the other elements but not for the silicon. And until this was accounted for, rediscovery of the so-called secret of Stradivarius could not be held valid.

By study of methods used by the old alchemists and apothecaries as recorded in writings of the years 1550 to 1750, before and during the period when the old Italian varnish was in existence, Mr. Michelman came on a satisfactory explanation for the silicon in their varnish.

Briefly, this is that the alkali they used to dissolve resin was extracted from wood ashes with water and lime. Silicon compounds are always present in wood ashes, and this, Mr. Michelman suspected, was the source of the silicon in the old Italian varnish.

Details of the duplication of the old method of making varnish are reported in the journal, SCIENCE (Sept. 22).

Science News Letter, September 30, 1950

ASTRONOMY

Mars Day Sky Is Deep Blue

➤ AN OBSERVER located on the surface of Mars would find a deep-blue daylight sky, Dr. Donald H. Menzel of Harvard University stated in an address to a special meeting of the Royal Astronomical Society in Dublin, Ireland.

"The polar caps of Mars are not great blocks of ice, but mere fields of hoarfrost, ice crystals like those on a windowpane or in the freezing compartment of an electric refrigerator. Their thickness is probably only a fraction of an inch and, during the long Martian summer, the frost caps slowly evaporate, without melting," he stated.

Unlike the earth, where only a minute fraction of the available moisture occurs as atmospheric vapor, Mars has a very sizable fraction of its moisture in the atmosphere. Even so, the humidity is extremely low—less than one-tenth of one per cent on the average, he said.

Once the polar cap has disappeared, within the season of the midnight sun, the polar caps can become the warmest spots on the surface of the planet. The temperature may rise to 65 or 70 degrees above zero Fahrenheit, Dr. Menzel stated.

He agreed with Dr. G. P. Kuiper of Yerkes Observatory that some simpler forms of vegetation, such as lichens, may be present on Mars. This form of life would account for the dark markings that change their color values with the Martian seasons. He also agreed with Dr. Kuiper in stating that animal life of types similar to those observed on the earth would be unlikely.

To account for the difference in the size of Mars when photographs are taken by blue and by red light, an effect first noted by Dr. William H. Wright of Lick Observatory, Dr. Menzel suggested a thin layer of fine carbon dioxide (dry ice) snow some 60 miles above the surface of the planet.

Science News Letter, September 30, 1950

GENETICS

Study of Genetics Aids Cancer Research

➤ THE science of genetics is helping in the search for causes and cures of cancer, even though heredity is at present a variable and uncertain factor in human cancer, Dr. Clarence Cook Little pointed out at the Golden Jubilee Celebration of the science of genetics in Columbus, Ohio. Dr. Little is director of the Jackson Memorial Laboratory, Bar Harbor, Me.

"Unbalanced growth tendencies introduced from different parental backgrounds may be a potent and basic factor in tumor formation," he said.

In most types of cancer, heredity may be involved, but its effects are complex and often indirect and unpredictable."

"In laboratory animals, however, where the force of heredity can be controlled, concentrated and analyzed, it is a powerful and important element in creating strains which are remarkably free from cancer or those in which its incidence is very high, generation after generation."

The use of genetics, he added, not only aids cancer research but has developed principles applicable in the whole field of experimental medicine.

"The hormones which affect the origin and progress of cancer growth," he said, "are to a large extent controlled in their degree of development of genetic influences."

Science News Letter, September 30, 1950

On This Week's Cover

➤ ARTIFICIAL suns six inches in diameter and comparable in temperature to the surface of the sun in the sky were demonstrated by Dr. Russel A. Miller, project supervisor of the high temperature research laboratory, in Philadelphia at the new Research Institute of Temple University.

Rods of aluminum, magnesium, and other metals are burned in small furnaces made of each metal's own product of combustion. Oxygen under pressure forms the atmosphere in which the six-foot metal rods are burned. Pools of melted metal, their surfaces covered with flames of burning metal vapors, are the "suns," as shown on this week's cover of SCIENCE NEWS LETTER, whose brilliance can be used to measure the temperatures inside the furnace. Materials are studied at the Institute at temperatures up to 7,000 degrees to learn how to make rocket engines and high-temperature turbines of more resistant materials.

Rotating furnaces are among the devices used to get the maximum heat from burning metals. These throw melted metal in thin sheets against the refractory sides of the combustion chamber, allowing it to combine faster with the oxygen supply.

Science News Letter, September 30, 1950