

the trick of hand-pollinating the female flowers with male flowers gathered wild in the woods. They sell about a thousand tons of the fruits annually to Chinese merchants, for transport to the coast cities and for shipment abroad. The flowers are described as an inch and a half or more in diameter, with yellow corollas. The fruits, when fresh, are greenish yellow or dull reddish brown, ranging from hen's-egg to goose-egg size.

The plant has been identified as a member of a large genus that ranges

throughout the Old-World warm lands, known as *Momordica*. Dr. Swingle has named the new species *Momordica Grosvenori*, in honor of Dr. Gilbert Grosvenor, president of the National Geographic Society, who, he states, "for many years has encouraged liberally the geographic and botanical exploration of China." The new name and a technical description are published in the *Journal of the Arnold Arboretum of Harvard University*.

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## POPULATION

## American Republic That Never Saw Census Man

**A**N American republic that has never seen the census man was described to the Population Association of America by Dr. Forrest E. Linder, technical expert of the U. S. Bureau of the Census.

In Haiti, the little country whose people have never been counted, the difficulties which would face a census enumerator would be enormous, Dr. Linder said.

The Island of Haiti is extremely mountainous, rising in some places to almost 9,000 feet, and is covered with a dense tropical vegetation so that travel in many parts is almost impossible.

There are roads, mostly on the coastal plains or near the large cities. But Dr. Linder explained, Haiti has had a long history of wars and revolutions, during which the fighting armies would sweep along the principal roads and travel lanes, burning and destroying the homes and crops of the peasants. For this reason the Haitian peasant has traditionally avoided building his home along the highways. Instead, he hides it away from the roads, behind trees or rocks.

A mountainside, Dr. Linder said, might be very densely populated and yet on first glance no sign of human habitation can be seen.

"In Haiti," he declared, "one can stop in the midst of a dense and apparently uninhabited jungle. Soon he will be surrounded by a group of curious Haitians who seem to have come from nowhere, but who actually live within a short radius."

In addition to these obstacles, the attitude of the Haitian peasant would stand in the way of a census taker. Illiterate and suspicious, Haitian peasants assume that any counting will involve something to do with taxes or the army.

Lack of a census in Haiti is but one of many factors that make it difficult for the statistician to obtain any true picture of the population of the Caribbean area, Dr. Linder told the meeting. In the many different government units of this area, the population data collected, methods of obtaining them, and accuracy of the results are different.

Illiteracy interferes with the collection of facts about the population. This is estimated (or guessed) to be as high as 95% in Haiti, 86% in Guatemala, 72% in Venezuela and Nicaragua, 67% in Colombia, 47% in Jamaica and 24% in Costa Rica.

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## PHYSICS

# Light Falling on Diamond Is Changed In Wavelength

## Phenomenon Called Gateway to Fundamental Knowledge Of Highest Value by Prominent Indian Scientist

**C**HANGE in color, or wavelength, of light when, for example, it falls on a diamond, and is scattered by it, is proving "a gateway to fundamental knowledge of the highest value," regarding the structure of matter in the solid state. So stated Sir Chandrasekhara Venkata Raman, leading Indian physicist, director of the Indian Institute of Science at Bangalore, Mysore, who was awarded the Franklin Medal of the Franklin Institute.

Since he was unable because of war conditions to come from India, the medal was received on his behalf by Sir Gerald Campbell, British minister to the United States. In a paper sent by Sir Chandrasekhara, a summary was given of some of his important researches.

"A transparent crystal traversed by a beam of light exhibits an opalescence due to diffusion of the light by the ultimate structure of the solid," he said. "The phenomenon is strikingly evident when a beam of sunlight traverses a block of transparent ice. It is often possible to find extensive portions in a clear block of ice which are quite free from inclusions, and the track of the sun-beam through such regions appears of a sky-blue colour, the intensity of the opalescence being about 30 times greater than the intensity of a similar track in dust-free air, but only a fraction of its intensity in dust-free water. The finest specimens of transparent quartz exhibit a similar effect, the opalescence, however, being less intense than in ice."

Early in 1928, Sir Chandrasekhara continued, he found that when a crystal,

or a liquid or solid, was illuminated by light of but a single wavelength, as from a mercury lamp, the light which was scattered included other wavelengths. These were revealed by the spectroscope. The difference in wavelength was found to be characteristic of the substance.

This, of course, is quite different from the colors which one sees in a crystal such as a diamond, when white light shines on it. In that case, all the colors visible are contained in the original illumination.

"On the principles of the wave-theory of light," he stated, "an ideal homogeneous crystal cannot scatter light." However, he proposed that a pulsation of the network of atoms which make up a crystal might cause such scattering if it took place in a certain relation to the light falling on it.

The wavelength shift in a diamond was studied as its temperature was raised. There was a change in amount of the shift, because the diamond expanded, and the light had a greater thickness to penetrate. However, there was no increase in the brightness of the altered color, as there would had it been due primarily to the effect of heat. Consequently, Sir Chandrasekhara concludes that the pulsations in the crystal which cause the scattering of light are caused by the light itself.

From these researches, he declared, it is possible to learn important information about the way matter is put together in the solid form.

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