experiments of several other scientists. Some of these investigators have estimated the size of virus particles from the size of the holes in a filter that they pass through. Others have estimated the concentration of virus in infected plant juice. One found that one part of infected tobacco plant juice diluted in ten thousand parts of water still contains infective material.

The layman's interest in these impressive figures is largely a matter of curiosity and wonder over the size and concentration of the substances that can cause him so much personal harm or financial loss.

The scientist's interest is related to the isolation of the infective principle of viruses. One as yet unsettled question about viruses is whether or not they actually are living organisms.

As Dr. Robbins explains it, if the tobacco mosaic virus, for example, is nonliving, attempts now being made to isolate it as a definite chemical compound will eventually succeed, provided a sufficient number of infective particles are present in a cubic centimeter of juice.

Put in another way, if scientists can finally isolate a virus as a definite chemical compound, they will know that viruses are not living substances at all.

Science News Letter, November 17, 1934

PHYSICS

New Band of Ultraviolet Found in Sun's Rays

A WHOLE new band of ultraviolet light rays in the radiation the earth receives from the sun has been detected by the Swiss scientists Edgar Meyer, M. Schein and B. Stoll. The discovery is believed to have an important bearing on future astronomical research.

In their report (*Nature, Oct. 6*), it is disclosed that sunlight is not completely cut off at about 2,800 Angstrom units of wavelength as previous research indicated.

An Angstrom is a unit of length equal to a bit less than four billionths of an inch. The ultraviolet region from 2,900 to 3,100 Angstroms consists of rays which have an actinic effect and cause sunburn.

It had always been supposed, as far as proof was concerned, that the ozone in the earth's atmosphere absorbed sunlight of wavelength shorter than those of the 2,800 to 2,900 Angstrom region. Theory predicted otherwise but careful searches to find sunlight of shorter wavelength were unsuccessful in the past.

Using special apparatus which counts individual photons of light energy instead of employing a photographic plate, the Swiss scientists were able to jump the gap caused by ozone absorption from 2,800 to 2,400 Angstroms and detect the new ultraviolet peak having a maximum of 2,100 Angstroms. The new-found rays started to come through at 2,400 Angstroms. So delicate was the method that the intensity was traced to nearly 1,900 Angstroms. The oxygen in the earth's atmosphere should cut off solar radiation less than 1,800 Angstroms of wavelength.

The research was carried out in a laboratory atop the Jungfraujoch in the Swiss Alps, at an altitude of 3460 meters—over two miles.

The new findings have important possibilities for high-altitude measurements of radiation from the sun and stars. Mirrors using aluminum instead of silver coatings have recently extended the ultraviolet astronomical front from 3,400 down to 2,300 Angstroms.

Now, at one stroke, astrophysicists can jump the gap caused by ozone absorption and reach still shorter wavelength regions of the solar spectrum. Another important contact with sunlight is thus established.

Science News Letter, November 17, 1934

ANIMAL HUSBANDRY

Sheep Reared Successfully On a Synthetic Diet

THE first two sheep ever reared upon synthetic diets have just been slaughtered in a Cornell University scientific experiment. They never tasted grass or grain but thrived on purified food elements. Scientists foresee the possibility of more rigorous nutrition experiments upon cows, goats, sheep, rabbits and other herbivorous animals as the result.

Reared by Dr. L. L. Madsen of Cornell's Animal Nutrition Laboratory, they were beautiful, mature animals although they never received a blade of grass nor a kernel of grain from the time they were weaned from their mothers. Each day for over a year they were fed a "synthetic" mixture of casein, cellulose, starch, vitamin concentrates and salts. They grew to maturity rapidly and were about a year and a half old at the time of slaughter.

This success in raising "synthetic" sheep ends seven years of trials to perfect a diet of purified foodstuffs for plant-eating, herbivorous, animals. Such

CAN YOU PICK THE "SYNTHETIC" SHEEP?

The two beautiful animals on the ends of the line have never tasted a blade of grass or a kernel of grain, but have thrived on purified food elements. A conventional grass-grain fed sheep is shown in the center for comparison.