"As the sun rises higher in the sky with advancing spring, in some way the strengthening ultraviolet rays correct this calcium deficiency. Possibly this result is due to the irradiation of the ergosterol, which is a normal constituent of the skin; or possibly the ultraviolet rays ionize the calcium in the tissues so it is more diffusible.

"Whatever the method of their action, it seems true that 'ultraviolet rays are the natural stimulus of that great metabolic organ formed by the living cells of the epidermis.' "

Scientific evidence thus seems to add its weight to the natural inclination to get out into the spring sunshine.

Science News Letter, April 14, 1934

MEDICINE

Sunburn no Assurance Of Rickets Prevention

JUST because Johnny has a good coat of sunburn does not mean that he is being protected against rickets, it appears from studies reported by Drs. Arthur Knudson and Frank Benford, Albany Medical College, to the American Society of Biological Chemists. Rickets is a disease of the bones characterized by bowlegs and bulging forehead.

The rays of sunshine that produce sun tan, or erythema as scientists call it, are not as effective as other wavelengths in curing or preventing rickets, the Albany investigators found. The rays that are most effective in preventing or curing rickets are shorter, or farther away from the visible light, than the rays that produce the deepest sunburn. It so happens that at the wavelength where the rickets-preventing rays are at their peak, the sunburning rays have least effect.

Ultraviolet lamps and other radiation devices used by physicians and in the home for health protection are generally rated by the amount of sunburn they produce. Dr. Knudson's discovery shows that in some cases lamps that produce satisfactory and even painful sunburn are not the most effective means of protecting against rickets. In the summer sunshine of Albany, where Drs. Knudson and Benford did their work, it happens that the sunburning qualities of natural sunlight coincide with sufficient rickets-preventing qualities to make the sunshine give health protection as well as coats of tan. In the winter sunshine of the same region the anti-rachitic rays are practically absent although it is possible to get sunburn through long exposure to the winter sunshine.

Science News Letter, April 14, 1934

METEOROLOGY

Analysis of Stratosphere Air Verifies Pre-Flight Estimates

THE FLYERS who have recently ascended into the stratosphere were not traveling in totally unknown territory. True, no one had preceded them to such heights, but scientists working at their desks, without moving off terra firma, had formed an estimate of conditions to be found there.

Using as a basis for their calculations such data as those obtained from observations of the way sound travels along the surface of the earth, and the way radio signals are returned from the electrified reflecting layer of the atmosphere, physicists were able to calculate the composition of the atmosphere at great heights. Their calculations have now received verification from analysis of the samples of air brought down from a height of nearly 12 miles by the Soviet balloon "USSR."

Drs. H. B. Maris and E. O. Hulbert, working at the Naval Research Laboratory, and Dr. B. Gutenberg at the California Institute of Technology, discovered from their calculations that the air high above the earth, as well as that near the surface, is warmed by the sun during the day and cooled by its own radiation at night. This daily variation in temperature must give rise to winds, they reason. And winds inevitably mean a mixing of the air that would cause the composition to be uniform.

The proportions of the gases in the air remain the same, they conclude, up to the great height of about 100 kilometers or 62 miles, except for ozone, which exists in greater proportion above 30 miles than it does at sea level.

Dr. Gutenberg has based his results, besides, on the spectrum of the auroras and on the height at which meteors appear. Furthermore, the fact that helium enters the atmosphere from the ground in such quantities that it should form a noticeable part of the stratosphere but that only traces have been observed, seems to indicate that this gas escapes from the atmosphere into the interstellar space, and the same seems to be true with hydrogen. The conclusions of Dr. Gutenberg are that we have very probably an increasing temperature in the stratosphere, beginning at a height between 30 and 40 kilometers (about 20 miles), no noticeable change of composition at least until a height of about 100 miles, no hydrogen at any height, a slowly decreasing amount of oxygen at heights of some hundred miles and, probably, small amounts of helium or water vapor or neon at very great heights. The principal gas at any height is nitrogen.

Since the samples obtained by the "USSR" showed the same proportions of oxygen, nitrogen, and other gases as are contained in the air we breathe at sea level, the physicists look upon this finding as evidence of the correctness of their theoretical predictions.

Science News Letter, April 14, 1934

PHYSIOLOGY

Effects of Alcohol on Mind and Body Summarized

WITH the legal status of alcoholic beverages settled, discussion now returns to the question of how alcohol affects the human body and mind.

Dr. Haven Emerson, professor of public health practice in Columbia University, has listed in his new book *Alcohol, Its Effects On Man* (D. Appleton-Century) the following fifteen points on which he says medical scientists who have studied the subject agree:

1. Alcohol is a narcotic which, by depressing the higher centers, removes inhibitions.

2. Outside of the nervous system and the digestive tract, alcohol used as a beverage has little demonstrable effect.

3. It is a food, utilizable as a source of energy and a sparer of protein, but it is such only to a very limited extent.

4. It is improbable that the quality of human stock has been at all injured or