The Employment of Liquid Air and Carbon Dioxide in the Treatment of Diseases of the Skin.

The lack of specific remedies for many diseases of the skin has caused a diligent search for new remedies more efficient or less disagreeable than those in common use. An epoch in dermatology was marked by the introduction of Roentgen rays, which exert a curative action in many cases of eczema attended with profuse exudation and intense itching, in psoriasis and in many fungous diseases of the skin and hair. Cathode rays have proven beneficial in numerous cases of lupus and, quite recently, malignant tumors of the skin have been cured by these rays.

But in many cases treatment with rays failed to effect a definite cure, and the experiments with other physical and chemical agencies were resumed. An American physician tried liquid air and carbon dioxide and obtained more or less success in cases of tuberculous abscesses, moles, pimples, and superficial cancer of the skin. The method of treatment is as follows: Cotton wool, wound tightly on the end of a rod, is dipped into the double-walled glass flask of liquid air and then pressed lightly on the affected part of the skin. The skin freezes and becomes inflamed and in from 10 to 20 days the morbid growth sloughs off.

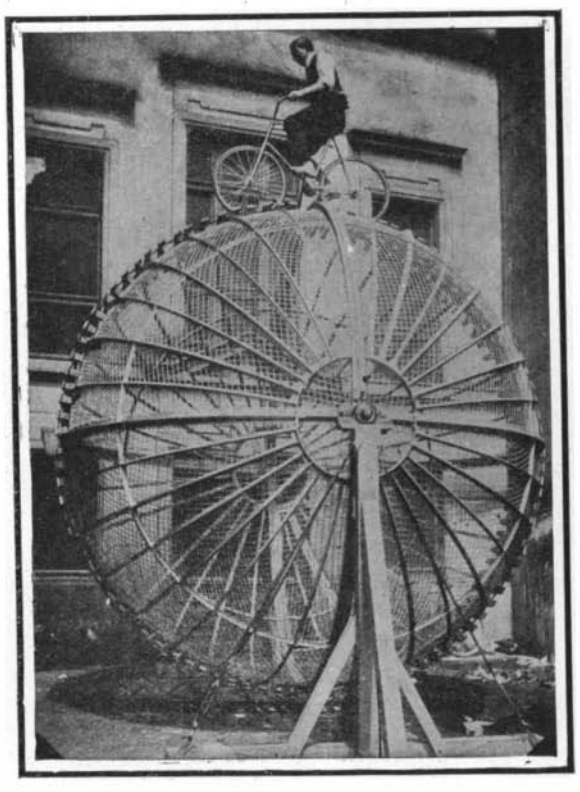
But liquid air is expensive and it also acts too energetically. An equally efficient, but cheaper and more manageable agent is carbon dioxide, which was first employed for this purpose by Pusey. From the steel cylinder which contains liquefied carbon dioxide, the vapor is allowed to escape into a glass tube. Here it condenses into snow, which is compressed by a piston into a hard mass. This can be trimmed to the size and shape of the morbid growth to which it is to be applied, and thus the freezing of the surrounding healthy skin can be avoided.

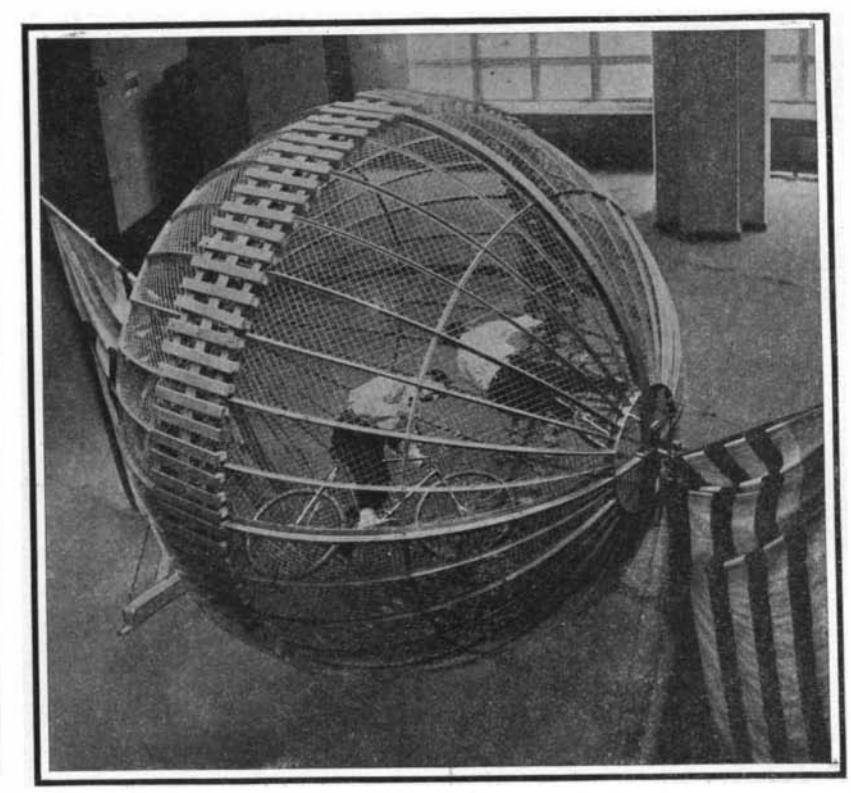
The temperature of carbon dioxide snow is —130 deg. F., while that of liquid air is about —290 deg. F. The snow is cold enough, however, to freeze the skin into a hard, white mass in a few minutes. Too long an application may cause necrosis, or death, of the underlying tissues. The skin subsequently becomes slightly inflamed and a blister, similar to that caused by a burn, is produced. In general, freezing and burning produce similar effects on the skin. In two or three weeks the part that has been frozen falls off as a scab, revealing skin of quite normal appearance or marked by a slight scar. The application of this remedy is not attended with great pain. In the treatment of facial blemishes especial care must be taken not to freeze the skin too deeply. The field of application of carbon dioxide snow is extensive. Hitherto good results have been obtained chiefly in cases of lupus, but small tumors, callosities, moles, pimples, etc., have also been treated with success.—Dr. Bergrath in Die Umschau.

CYCLING TRICK IN A BERLIN VARIETY THEATER.

The accompanying illustrations picture a trick performance which recently attracted much attention in Germany. In the first photograph a cyclist is shown traveling outside a globular cage on a narrow wooden path. He uses an ordinary bicycle wheel of 28 inches diameter, and that of the globe is ten times as great, viz., 280 inches. The circumference is consequently $280\pi = 879.6$, or roughly 880 inches. The globe is rotated by the friction of the cycle wheel on the top. Every minute it makes 30 revolutions, or 1,800 in one hour. Any point of the equator travels a path equal to 880 times 1,800 in one hour, or 1,584,000 inches. As one mile is 63,360 inches, it means that $\frac{1{,}584{,}000}{63{,}360}$ = 25 miles are covered in one hour. The cyclist must be very careful to keep in the center of the path. By far the greatest difficulty lies in the fact that his weight constantly draws him down the slope in front as well as backward. In other words, he must not only keep his balance right and left, but also forward and backward. The latter feat he accomplishes by accelerating or retarding his bicycle.

The other photograph shows two men inside the cage. They rotate the globe through the frictional contact of their wheels with the globe.

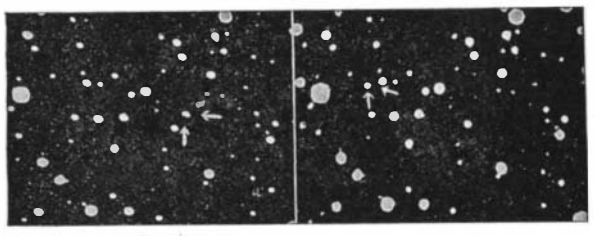




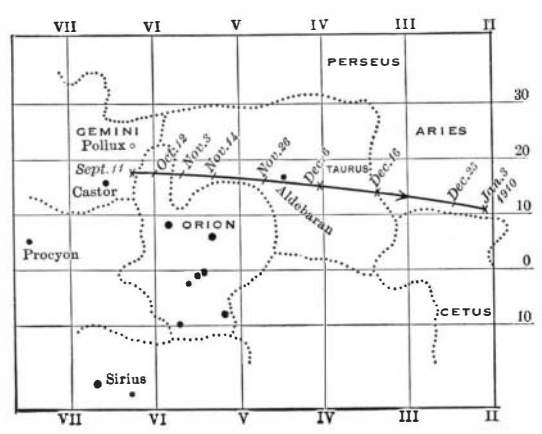
THESE TWO ILLUSTRATIONS REPRESENT A REMARKABLE BICYCLE TRICK WHICH ATTRACTED CONSIDERABLE ATTENTION IN GERMANY. A GLOBULAR CAGE 280 INCHES IN DIAMETER IS FRICTIONALLY ROTATED AT HIGH SPEED BY AN ORDINARY BICYCLE.

THE FIRST PHOTOGRAPH OF HALLEY'S COMET.

The accompanying photographs of Halley's comet were printed from negatives made with the Yerkes two-foot reflector by Mr. Oliver J. Lee on the nights of September 24th and September 26th, astronomical, or



In this photograph of Halley's comet the arrows indicate the position of the comet. At present the comet can be seen only through a powerful telescope.



The path of Halley's comet from the date of its discovery to January, 1910.

THE FIRST PHOTOGRAPH OF HALLEY'S COMET.

on the early mornings of September 25th and 27th, civil. The photographs are here published by permission of the director of the Yerkes Observatory, editor of the Astrophysical Journal, in the October number of which magazine these pictures are appearing, together with photographs taken on other dates. On September 24th the exposure was from 13h. 12m. to 15h. 42m. central standard time; on September 26th, from 14h. 47m. to 15h. 47m. central standard time. The arrows point to the comet, which is slightly elongated on the 24th, due to the motion of the comet during a two and one-half hours' exposure. The picture is much enlarged, and the stars shown are actually very faint, none of them visible to the naked eye. The brightest star in the field, at the left of the comet on each day, is of magnitude 8.7, or about ten times fainter than the faintest star that can be seen with the naked eye without a telescope on a clear night. The faintest stars shown on the original plate are about twenty-five thousand times as faint as a sixth-magnitude star, the limit of naked-eye visibility. The comet's motion in the sky at this time is comparatively slight, and will be very much greater later. The comet was "retrograding," or going westward, at this time, as seen from the earth (to whose motion this retrogression was wholly due), having ceased its eastward motion a few days before.

The comet has been micrometrically observed on several nights with the forty-inch Yerkes telescope by Profs. Burnham and Barnard. On the 26th it was estimated by Prof. Barnard to be of magnitude 14 or 14.5, with a diameter measured as 10 sec., but without definite boundary. The presence of strong moonlight is likely to prevent the observation of the comet, either visually or photographically, for several nights after September 27th.

A High School of Aerial Navigation in France.

It is due to the energetic efforts of Commander Rocher, who has succeeded in enlisting the assistance of a committee, the members of which are all well known in the scientific world, that a special high school of aerial navigation has been organized in France on the following basis:

1. All former students of the polytechnical schools, the schools of bridges and highways and mining engineering and of naval construction will be admitted as a matter of course. Graduates of science (in general physics and mechanics) will be admitted upon passing examination in the drawing of machines. Other places will be awarded upon open competition.

2. The course of instruction comprises one scholastic year.

3. The principal courses of instruction will be in all branches of aerial navigation, aerostatics, and aviation, and about motors, especially gas motors. The annual lectures about the various topics are arranged in such a way that the students will be kept posted about all evolutions in aerial navigation and of the sciences relating to it.

4. Independent of these courses of instruction, the students will have to execute practical work relative to aerial navigation and to motors.

5. To students who have completed all the courses as well as the technical work, and have successfully passed the examinations, the diploma of engineer of aerial navigation shall be awarded.

6. Besides the regular students, any person may attend one or several courses, without, however, participating in the technical work and without being entitled to examinations or to the award of the diploma.

7. The tuition fee for regular students is $200. The fees for other persons vary, according to the number and the importance of the courses which they desire to attend.

It seems only logical that France, having been the first country to promote aerial navigation, shall also be the first one to organize a higher course of instruction in same on a thorough and rational basis.

Another new hydro-electric plant is to be commenced shortly in Canada on the St. Lawrence River near St. Timothee, Quebec. The main features of the initial development are a canal intake and headgates about 3,200 feet below the present intake, enlargement of the Beauharnois Canal from the intake to the station site, a distance of 32,000 feet, and turbines of 21,600 horse-power capacity. The generators will consist of three 4,000-kilowatt turbine units, two 250-kilowatt exciters, and there will be three 4,000-kilowatt transformers. A transmission line 27 miles long to Montreal will be constructed, with transformer substations and distribution system there. The present developments are expected to cost $4,000,000, the contract being let on the cost plus commission basis.