

Scientific Discussions by Garrett P. Serviss

Roland Rohlf's achievement in forcing his aeroplane to a height of 24,610 feet (over six and a half miles) leads to many interesting considerations. No man ever before got as far as that away from the centre of our planet. Yet unmanned balloons have been seen more than twice as high.

At least one "sounding balloon" has gone to a height of 55,000 feet, or about 10,500 miles, and many have attained ten and twelve miles elevation. The height reached by these balloons was ascertained in precisely the way in which Rohlf's determined the elevation of his aeroplane, viz., by the indications of a barometer. The barometers carried by the balloon automatically recorded the lowest atmospheric pressure experienced, the point of lowest pressure corresponding, of course, with that of highest elevation above sea level.

These instruments do their assigned work when there is no eye near to watch them, although it is the cunning of the human brain that they obey. Rohlf's says that at the peak of his tremendous ascent, which overtopped the loftiest mountain on earth by more than a mile, his powerful propellers were unable to lift him a yard higher, notwithstanding all his efforts. This is not surprising when we consider that at an elevation of six and a half miles the density of the air is reduced to less than one-quarter of what it is at sea level. Trying to rise by an aeroplane in air so rare as that would be like trying to swim in a liquid one-quarter as dense as water.

It is not surprising, either, that he had continually to resort to his artificial supply of oxygen, for while the proportion of oxygen in the air is about the same at all levels, owing to the law of equal diffusion of gases, the quantity taken in at a breath, when the expansion is so great, becomes too little to maintain the life processes. The fall of temperature that he observed, and against which his warm clothing sufficiently protected him, was about in accord with the general rule of one degree decrease for every 350 feet of ascent.

The extent of the view over the earth's surface that lay beneath him was the greatest ever offered to human eyes. At an elevation of six and one-half miles the depression of the horizon from the observer is then about 230 miles. Thus Rohlf's aeroplane, at the top of its climb, was the apex of a cone six and one-half miles high, whose base embraced the entire horizon. The surface of the earth at such distances is then about 168,000 square miles—over four times that of the State of Ohio. Of course, at such distances all the smaller details were lost, and even directly below, only six and one-half miles down, small objects, like men, could not have been distinguished to the naked eye. This forms an interesting commentary on the curious notion that a magnifying power of a few thousand diameters ought to make the inhabitants of the moon visible.

As a matter of fact a magnifying power of ten thousand diameters, which has never been obtained or even approached with any telescope, would still leave the moon at an apparent distance of about twenty-four miles from the eye, at which distance, with the clearest view, it would be practically impossible to recognize even the largest buildings. The impressiveness of a view embracing in a single circuit about 1-1200th of the entire surface of the earth, for that is what lay within reach of Rohlf's eyes, may be imagined but cannot be described. With a dip of the horizon amounting to only three and one-quarter degrees, the eye would still be deceived by the apparent elevation of the outer edge of the vast circle, so that the portion of the earth within the range of vision would have the look of an immense basin, instead of what it really was—a considerable part of the convex surface of a sphere 8,600 miles in diameter.

It would be necessary to be at a height equalling a considerable fraction of the earth's radius before the roundness of the globe became evident at a glance. One would have to rise to an elevation of about one hundred and fifty miles in order to look down a slope of fifteen degrees to the horizon, and as the distance of the horizon would then be about a thousand miles, so slight a slope would hardly suggest a globular shape. And at a height of one hundred and fifty miles the air must be rarer than any vacuum chamber that we can make.

Pa. Masonic Lodges Get 12,000 Members Philadelphia, Dec. 5.—More than 12,000 new members were added to Masonic lodges in Pennsylvania during the last year, according to a statement of the Masonic Grand Lodge. The normal increase is about 5,000. The rush to join the Masonic order is attributed to the ending of the war in Europe. Many of the new Masons are returned soldiers.

William Hamilton, of Pittsburgh, was elected junior grand warden, the only office ever which there was a contest. The other officers chosen, who will also be installed on St. John's Day, December 27, are: R. W. grand master, John S. Sel, Greensburg; deputy grand master, Abraham M. Beitler, Philadelphia; senior grand warden, Samuel M. Goodyear, Carlisle; grand treasurer, Thomas R. Patton; grand secretary, John A. Perry.

The committee on Masonic Homes elected comprises: George B. Orndy, R. W. past grand master; Edward W. Patton, George W. McCandless, William M. Donaldson, Andrew H. Hershey, Henry C. Shook, Louis A. Watres, R. W. past grand master. Confesses Sending Bomb to Mrs. Wanamaker New York, Dec. 5.—Ernest Albert Gustav Kurth, who sent a bomb to Mrs. Rodman Wanamaker, pleaded guilty to assault. He will be sentenced December 11, the maximum penalty being five years' imprisonment. He had been employed in the Wanamaker home, but was discharged for giving wine parties. A representative of the district attorney's office told Judge Wadhams he believed Kurth intended merely to injure Mrs. Wanamaker, and not to kill her. The bomb failed to explode.

No Normal Children Are Seen in Vienna London.—Miss Ruth Fry, secretary of the Friends' war victim relief mission, draws an appealing picture of the effects of the shortage of milk on the health of children in Vienna. "I have recently paid a visit to Vienna," she said, "and therefore had special opportunities for obtaining information. "Even the tragic state of Lille after the withdrawal of the Germans, when 80 per cent of the children were found to be undernourished and 40 per cent tuberculous, was not so terrible as that of Vienna, now a city of 2,500,000 inhabitants, where one never sees a normal child in the streets; where practically all the children of the wage-earners are undernourished, practically all under three suffering from rickets and a large proportion of older children suffering from both rickets and tuberculosis, which has reached the proportions of a dangerous epidemic. "This ghastly state of affairs is the direct result of malnutrition and, above all, of the absence of milk. In Vienna milk is reserved for infants under one year and the most serious cases of illness. But in many cases even the absence of milk allowed has to be cut down one-half."

After describing some of the effects of the shortage of milk in Germany, where the conditions are much better than in Austria, Miss Fry asks: "Could not measures be introduced in those countries which have not yet adopted them, whereby healthy adults should be called on to make a sacrifice in the interests of the children, not only of their own countries, but of allied and enemy countries as well? The surplus milk could then be dried or condensed for export. "So long as serious shortage exists anywhere, milk should be reserved everywhere for those whose future health and strength depend on it. The health of the next generation," she says in conclusion, "is an international question."

Admits Stealing Clock From Mail Airplane Pittsburgh, Pa., Dec. 5.—Frank Duminsky, of DuBois, Pa., pleaded guilty in United States district court when he was brought before Judge Orr, accused of stealing a clock from airplane No. 94 of the New York-Cleveland air mail route, when it landed near DuBois October 15. The crew left the machine for several minutes and upon their return the clock, valued at \$48, was missing. A search of the vicinity resulted in the arrest of Duminsky and the recovery of the timepiece. Duminsky released on \$300 bail, will be sentenced Saturday.

ELECTRIC NEEDLE ENDS SEVEN-DAY SLEEP New York, Dec. 5.—Application of electric needles to the spine cured a case of sleeping sickness yesterday in St. Mary's Hospital, Brooklyn. Miss Lena Pasco, 29 years old, who had been in a sound slumber since last Friday morning, was brought back to consciousness by electrical treatment.

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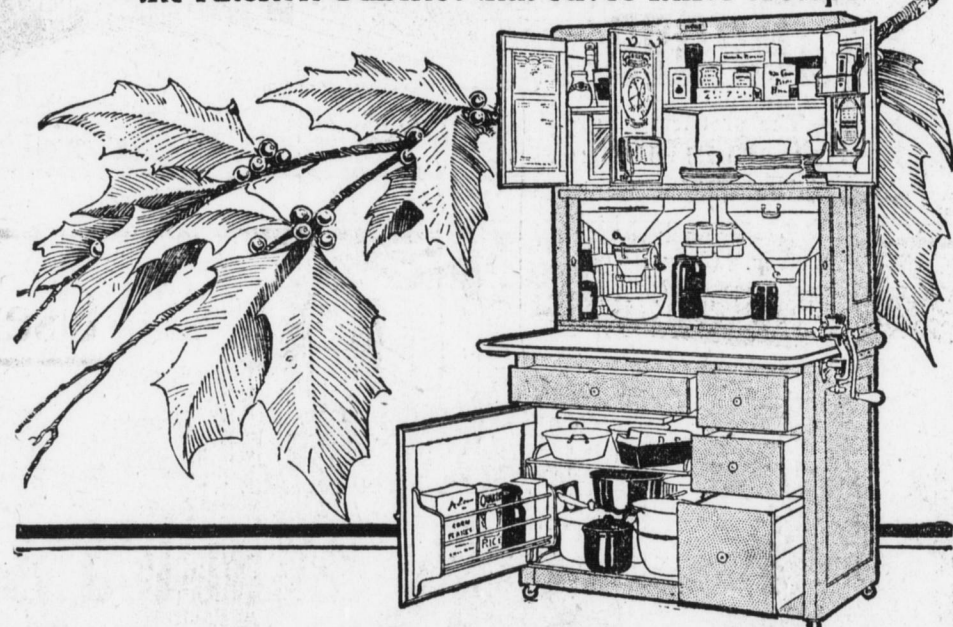
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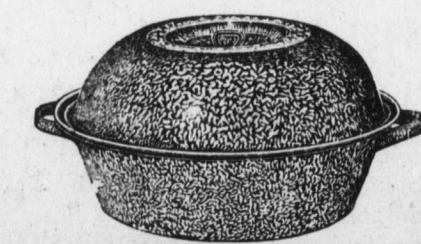
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