

original surface there was found the principal part of the skeleton, considerably scattered about, but with the skull nearly intact and with unbroken tusks. The bones lay on a bed of clay, broken slate, gravel and water-worn pebbles. This was probed to a depth of ten feet without finding bottom. The right fore leg of the skeleton was missing, but was later found in another pothole 60 feet farther up stream and at least 25 feet higher. Hall thought that the potholes were of glacial or preglacial origin, but I am assured by Professor Fairchild that they have been drilled since the Wisconsin ice sheet abandoned that vicinity. When the ice began to withdraw, the region was depressed about 350 feet below its present level, as a result of which the site of Cohoes was covered with a thick deposit of sand and clay. As the land slowly emerged, the old Mohawk River (Fairchild's Iromohawk) cut through the estuary deposits and finally reached the underlying Hudson slates. Then under the action of strong currents the drilling of the potholes began. The land had then risen, as Professor Fairchild writes, at least 150 feet. At the same time the stream bed was being worn down into the rock and the falls were moving up stream past the potholes. When the mastodon entered the pothole this had long before ceased being cut; for, as already stated, it had become filled to a depth of at least 10 feet with rock debris. It had quite certainly been abandoned by the river waters, except at times of flood. How now did the mastodon get into that hole? Hall concluded that it had been frozen up in the glacial ice and had been dropped part in one pothole, part in the other. But when those potholes were ready for occupation as a tomb for the mastodon, there was no part of the general glacial sheet from which the cadaver could have reached Cohoes. As a recently dead body it might indeed have been floated down the Mohawk; but the animal could as well have lived and died at Cohoes. We may fairly assume that it had only recently died and was lying on the flood plain not far above the potholes. No disarticulated

bones could ever have been distributed as this skeleton was. The bones must, perhaps without exception, have been held together by the ligaments and probably much of the flesh remained. At this moment the river rose and swept the flood plain, carrying the cadaver over the potholes. First the right leg became detached and was swept into the upper one of the two holes; then the remainder of the body was carried on and dropped into the second hole. Here the swirling waters either at once or during subsequent floods scattered the skeleton somewhat. As time went on, all sorts of materials were borne into the potholes during freshets. Possibly some trees growing on their margins fell into them. At any rate, they finally became filled up.

It appears quite certain that when the Cohoes mastodon was buried the deposition of marine sediments in the Champlain and the upper St. Lawrence valleys had largely taken place and the Champlain epoch, about the last leaf of the last chapter of the Pleistocene, had nearly ended. Did mastodons end their career at this stage of geological history or did they continue on into the Recent epoch? It may be impossible to determine this. If they did continue to exist, it might be supposed that remains of them might be found in deposits of marl and muck overlying the Champlain deposits along Lake Champlain, and the St. Lawrence and Ottawa rivers; but the writer has not learned of any such cases. At any rate, the close of the Pleistocene or the beginning of the Recent became an insalubrious time for this species, a mighty race which can be traced back possibly to the Pliocene and which had weathered the vicissitudes of four or five glacial periods. At approximately the same time there perished two species of elephants, the giant beaver (*Castoroides*), the moose (*Cervalces*), and perhaps other great animals.

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#### HUMAN FLYING

TO THE EDITOR OF SCIENCE: While engaged in some scientific research, my attention was

called to an editorial article with the above caption, in the *American Journal of Mining*, April 25, 1868, Vol. V., p. 264, which later became the well-known *Engineering and Mining Journal*. A comparison of what is accomplished now with the scientific view of that day, a little over fifty years ago, may prove interesting to the readers of SCIENCE.

In part, the article states:

Inventors have puzzled their minds for ages to compass the problem of air navigation by machines or by flying men; and but little advance has been made. . . . It would of course be absurd to affirm that anything could not be done, in this age of the world; but while this feat may be accomplished to an extent "enough to say so," we are incredulous of any practical benefit of the thing to man. . . . The force which a man is able to expend in rapid ascension of heights, even with the firm earth under his feet, is very small; and we have never seen any principle elucidated which was able by apparatus to increase his power or lessen his gravity in proportion to it.

The balloon remains; but that, if used, presents such a surface to the atmosphere that it can not be accurately guided without, by means of steam-boilers or other weighty machinery, storing up power for propulsion, in a manner of itself too cumbrous and heavy for successful navigation.

So that, whether it is for his own personal flight through the air or the management of a great atmospheric ship, man seems to be hemmed in on every side by almost insuperable natural difficulties. And besides, even were all this obviated, who would run the risk of accidents at a great height above the earth, beyond the reach of help—but not of gravitation? It is an interesting problem, and may result in pretty scientific toys; but for real helpfulness to humanity we see but little in Aeronautics.

Taking the vast change that has been worked out in the life time of many of us, does it not afford encouragement to our young people to endeavor to solve the many problems lying before them, ere the next fifty years shall pass?

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#### KEEPING STEP

TO THE EDITOR OF SCIENCE: Sound travels about 1,060 feet per second at 0° C., or 265 feet in one fourth second. The soldier next the drummer steps with the drumbeat, the soldier 265 feet in the rear is one fourth second late and has his foot in the air when the foot of the front man is on the ground. This is because they march at 120 steps per minute (2 steps per second), which gives one half a step in one fourth second. Hence the soldier who hears the signal one fourth second late will fall one half step behind. I have seen this in columns turning into Victoria Street from Westminster Cathedral, at Lancaster Gate or Holloway Road, on Salisbury Plain, etc.

When tired out or on rough roads soldiers left to themselves do not keep step; but it is a remarkable fact that the only time they keep perfect step is when they are without sound signals. If the drum begins they lose perfect step at once and the feet are seen to strike the ground in receding waves as the sound passes down the line. If the drum stops, the men in two or three seconds get into perfect step again, and go with a sway and swing absent at other times. The French term it *rapport* or *esprit du corps*. Is there a mutual subconscious force passing between the men? In a short brochure of experiments in such matters to be found at public libraries I have suggested an explanation. Is it the right one? I should be glad to hear from American observers of the phenomena.

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#### QUOTATIONS

##### THE ORGANIZATION OF RESEARCH IN GREAT BRITAIN

IN a paper on the state organization of research, read at a recent meeting of the Royal Society of Arts, Sir Frank Heath, K.C.B., Secretary of the Department of Scientific and Industrial Research, succeeded in compressing into a few pages a lucid amount of the work of his department. His characterization of research in general is, so far as it goes, excellent, and ought to be taken to heart by the