

THE DANILEWSKY FLYING MACHINE.

We have been favored by Dr. K. Danilewsky, of Charkov, Russia, with some interesting photographs and particulars of the latest improvements which he has made in his balloon-flying machine. In the SCIENTIFIC AMERICAN for December 31, 1898, we have already illustrated Prof. Danilewsky's first experiments. He is a well-known engineer and an expert in aeronautics, and experiments were conducted under the auspices of the Russian government in order to give the inventor a chance of demonstrating the practicability of this dirigible air-ship, and its feasibility for use in the Signal Service Corps of the Russian army. The results obtained were remarkably successful and were conducted by Dr. Danilewsky himself, who, mounted on his balloon chair, steered the flying machine in any direction he desired. This balloon-flying machine is based on the hypothesis that if a man's strength, in proportion to his weight, is not sufficient to raise him in the air, he can raise himself if of his weight is subtracted. By the use of a balloon part filled with pure hydrogen the weight of the man is eliminated from the problem, and he can devote all his efforts to propelling and steering the balloon which is supporting him.

When not in use Dr. Danilewsky's balloon is kept in a large shed on his estate. It requires only three or four men to assist in making the start, which is a great advantage over the ordinary military balloon, which requires the service of fifteen men or more to launch it successfully. The Danilewsky balloon has the added advantage of being inflated in a short time, only half an hour being required, and when inflated it can be transported to any distance by the aid of a couple of men. In the trials to which we have referred, the balloon ascended to an altitude of 300 feet and after circling around was brought to a full stop. The descent was then made to the ground in order that the Russian officers could observe its action and see what absolute control of it the inventor had. This is the most important matter connected with any former balloon. It is easy enough to make a balloon or air-ship which will ascend, but the descent is always a hazardous undertaking, and many aeronauts have lost their lives, or at least wrecked their machines, in their attempt. The balloon was then allowed to again ascend until it was completely lost to view. It seemed unaffected by the air currents and went straight up without the slightest deviation. About two hours after it had disappeared a black speck was seen, and at first the officers could hardly believe that it was the returning air-ship. The balloon gradually increased in size, and in the course of a quarter of an hour this peculiar air-ship could be distinguished, and in half an hour the trappings and inventor himself could be discerned. The balloon came down in nearly a straight line, and when about 500 feet above the earth, the speed was slackened, the adjustments were changed so that the direction was slightly altered in order to avoid a large clump of trees on the estate of the inventor. The balloon air-ship passed the trees safely, passing only a few feet over their tops. It then descended very near the great shed, and the inventor leaped out of the chair. It is little wonder that the Russian officers should have been delighted with the remarkable success of the invention.

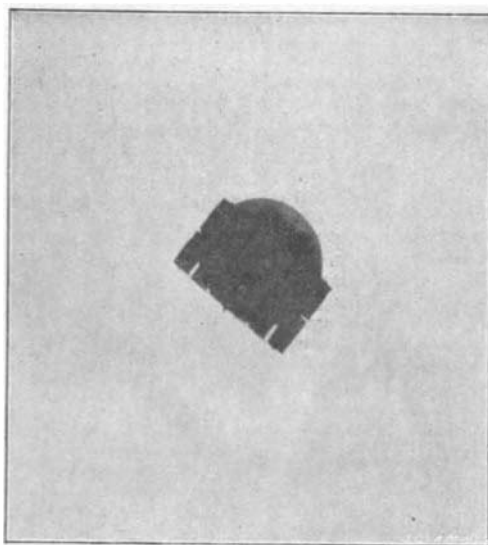
There is little question that the Danilewsky balloon has many points of value over similar machines. In the first place it only requires the services of a small number of men, the filling of the balloon requires far less time than the ordinary military balloon, and it requires much less space when taken to pieces. Unlike a captive balloon, it is free and can rise to any height desired, passing over the enemy at an altitude too great for them to reach the balloon by means of special balloon guns, such as those made by the Krupps, of Essen, and used with success in the Franco-Prussian war. The absolute control of descent is also a most valuable feature, as it is accomplished without the slightest risk. The balloon shown in our engravings has improvements over the one which we have formerly illustrated in the SCIENTIFIC AMERICAN, and these improvements have added much to its mobility and ease of control. The experiments have induced a

number of Russian experts to state that in their opinion Dr. Danilewsky has presented a practical solution of the problem of aerial navigation.

The Situation of Ophir.

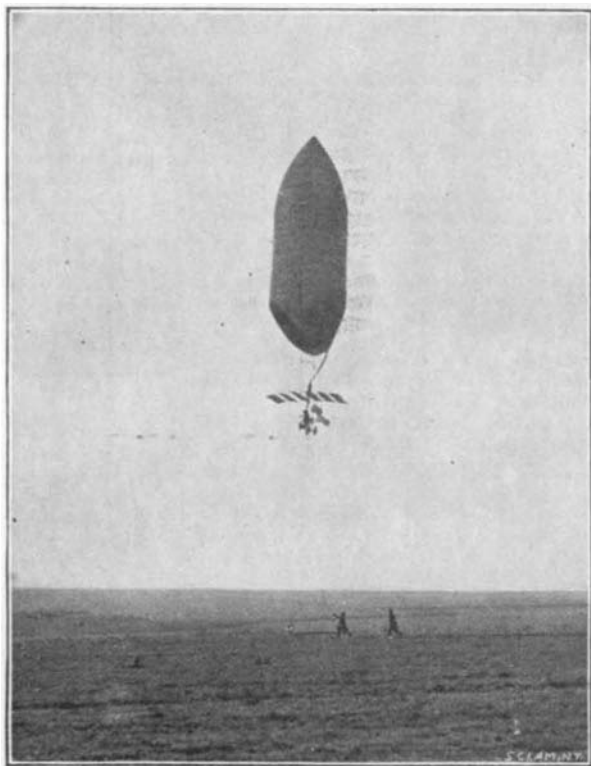
A correspondent of Reuter's agency recently had an interview with Dr. Carl Peters on the subject of the rediscovery and identification of the ancient gold-bearing site known as Ophir. According to the German traveler, this much discussed locality is situated on or near the Zambesi River, and he considers that the theories which would place Ophir either in India or Arabia are both wrong.

He does not disprove the early theories, and that which would place Ophir in India, on the banks of

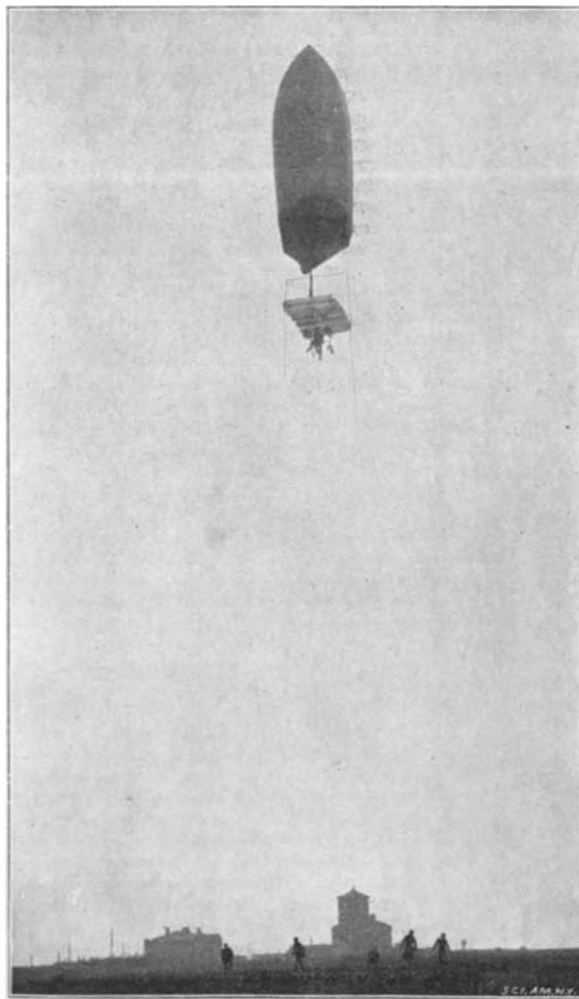


View from Underneath.

the Indus, has much in its favor. The apes and peacocks which were brought to Solomon from the neighborhood of Ophir would seem to indicate that its site was nearer Palestine than India, for it is well known that peacocks would not survive a long voyage, which must have lasted several months and have been made in an open boat. It is hard to avoid the conclusion that more



The Ascent.



Nearing the Earth.

THE DANILEWSKY DIRIGIBLE BALLOON-AIRSHIP.

than one place bore the name of Ophir. It is not necessary for the Ophir whence Solomon obtained gold to have been situated as near as the northern end of the Red Sea, for it is most likely that seamen who traded through Hiram obtained goods which they had to sell from the larger boats which sailed through B&b-el-Mandeb, either to India or to ports on the northeastern and eastern coasts of Africa. Dr. Peters' claim that the discovery of Ophir mentioned in the Bible has been made has awakened considerable interest, and it is hoped that he will lose no time in bringing together the important facts he must have collected in substantiation of this view, including the evidence which would connect the phallic rites and worship of the northern Semites with the nature worshippers on the eastern coast of Africa.

Artificial Silk.

For the manufacture of artificial silk a pressure of forty to forty-five atmospheres is required to force the collodion from the reservoirs to the spinning machines, which are constructed with pipes running on each side. Into these pipes are screwed a number of taps with a glass capillary tube fixed on the end, called a silk-worm, through which the collodion is forced; immediately it comes into contact with the air it solidifies, enabling the operative to take hold of the thread or silk, as it can now be called, and convey it to the bobbin. From twelve to twenty-four of these threads are run together on to one bobbin, according to the size of silk required, as is the case with natural silk. After the silk has been dried it is very inflammable and quite unfit for use in textile goods; therefore, a process called denitration is next carried out, which reconverts the product into cellulose. One of the uses of the material is for mantles for the incandescent gas light, it being found that the salts of the rare metals can be mixed with the collodion with greater economy than with any other thread. Large works are in operation at Besançon, in France, producing 7,000 pounds weight per week; but the demand is so great that extensions of the works are being made in order to enable them next January to produce 2,000 pounds per day. The production at Sprietenbach is 600 pounds daily. Other factories are about to be established in Belgium and Germany.—Nature.

WHEN Jumbo, the great elephant who delighted the children of two continents, was killed in Canada in 1885, the skin and bones of the big elephant were saved, and butchers were employed fifteen hours in cutting the flesh from the bones. In the stomach of the great elephant was an assortment of odds and ends including a peck of stones and a collection of coins, which showed that he had been a traveler. There were French, German, Austrian, English and American coins, of all denominations. He also seemed to have a taste for lead car seals, which he had added to his collection on his railway trips. A policeman's whistle was, according to The Inter-Ocean, even found in the capacious paunch.

The Current Supplement.

The current SUPPLEMENT, No. 1255, has many articles of unusual interest. The first page is occupied by engravings showing English armored trains in action in South Africa. "The Homemade Windmills of Nebraska," by E. H. Barbour, is continued, and the present installment describes the Merry-go-round mills, the Battle-ax and Turbine mills. These homemade windmills are attracting great attention, and the subject is a most interesting and important one. The article is profusely illustrated by engravings. "The Catalytic Process for the Manufacture of Sulphuric Acid" is an article by Frederick H. McGahie and describes a most important process which is working a revolution in the manufacture abroad of sulphuric acid. "Armored Turrets" describes four methods of installing and working this important adjunct to coast defense. "The Mors Carriage" de-

scribes an automobile, giving a view showing the machinery. "The Canker Worm" is by the late Grant Allen and is accompanied by 19 illustrations.

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