

helix produced a deflection of thirty-seven degrees; from two helices both on the same rod fifty-two degrees, and from three fifty-nine degrees: but when four helices were used, the deflection was only fifty-five degrees, and when to these were added the helix of smaller wire around the armature, the deflection was no more than thirty degrees. This result may perhaps have been somewhat affected by the want of proper insulation in the several spires of the helices, it however establishes the fact that an increase in the electric current is produced by using at least two or three helices instead of one. The same principle was applied to another arrangement which seems to afford the maximum of electric development from a given magnetic power; in place of the two pieces of iron and the armature used in the last experiments, the poles of the magnet were connected by a single rod of iron, bent into the form of a horse-shoe, and its extremities filed perfectly flat so as to come in perfect contact with the faces of the poles: around the middle of the arch of this horse-shoe, two strands of copper wire were tightly coiled one over the other. A current from one of these

helices deflected the needle one hundred degrees, and when both were used the needle was deflected with such force as to make a complete circuit. But the most surprising effect was produced when instead of passing the current through the long wires to the galvanometer, the opposite ends of the helices were held nearly in contact with each other, and the magnet suddenly excited; in this case a small but vivid spark was seen to pass between the ends of the wires and this effect was repeated as often as the state of intensity of the magnet was changed.

In these experiments the connection of the battery with the wires from the magnet was not formed by soldering, but by two cups of mercury which permitted the galvanic action on the magnet to be instantaneously suspended and the polarity to be changed and recharged without removing the battery from the acid; a succession of vivid sparks was obtained by rapidly interrupting and forming the communication by means of one of these cups; but the greatest effect was produced when the magnetism was entirely destroyed and instantaneously reproduced by a change of polarity.

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## COMMERCE

## Floods May Increase Sale Of American Goods in China

THE Yangtze River, whose appellation "China's sustenance" has now become singularly ironical, may aid American commerce at the same time it brings sorrow to the area around the city of Hankow. Data at the Far East division in the U. S. Department of Commerce point to the probability of an increased sale in China of United States goods to replace those destroyed there by the recent floods.

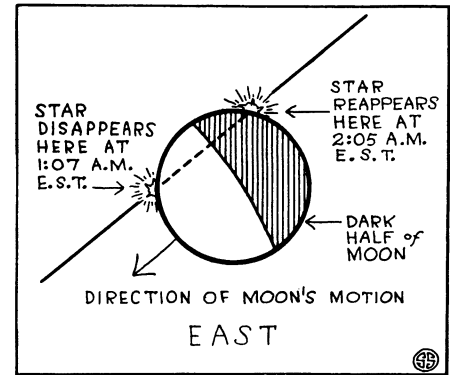
At this time of the year, when American vessels ply the trade route from San Francisco direct to Hankow, there exists a marked need for all kinds of stocks, from flour and other foodstuffs to machinery, from clothing to building materials. Cables to the Department of Commerce say that the majority of the reserve supplies have been lost by the raging waters, making supply from outside necessary and enlarging the market for United States goods.

The flooded Yangtze has made pos-

sible the passage of the large ocean-going steamers, which in low water time unloaded cargo at Shanghai for transshipment by smaller vessels. The city of Shanghai, which because of its proximity to the mouth of Yangtze has been believed by many to be flooded, actually has not been touched by the raging waters, nor is it likely to be. The highest water level has been reached, reports state, and the swollen streams are beginning the long ebb back to normal size.

The Yangtze river, itself, which has done so much damage to Hankow, is the collecting and distributing center of half the commerce of all China. It winds down from the Tibetan plateau across the ridges and plains to the Yellow Sea, a distance of some 3,000 miles. Its drainage area in Szechuen and below is about 650,000 square miles, four-fifths of which lie above Hankow.

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### BEHIND THE MOON

*As the diagram shows, is where Atlas, or "27 Tauri," was for almost an hour on the morning of Sept. 4.*

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and near the northeastern horizon is Capella, in Auriga, the charioteer. Fomalhaut, in Piscis Austrinus, the southern fish, appears low in the south. It is slightly brighter than Deneb, but its proximity to the horizon partially dims it also.

As for the planets, only Saturn is visible in the evening this month. It is in the constellation of Sagittarius, the archer, low in the Southwest, below Aquila. The two eclipses give a good indication of the phases of the moon this month, for a solar eclipse can only occur when the moon is new and a lunar one only when it is full. It is at last quarter, therefore, on September 5, new on the 11th, at first quarter on the 18th and full on the 26th, so that from the middle to the end of the month the evenings will be moonlight.

At 7:24 P. M., on September 23, the sun, having advanced on its southward journey through the sky, crosses the equator. This is the autumnal equinox, and marks the official beginning of autumn.

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## LINGUISTICS

### Variability in American Speech to be Shown

A LINGUISTIC atlas of the United States is being prepared by the American Council of Learned Societies in Washington.

Language experts headed by Dr. Hans Kurath of the Ohio State University have begun to cross-examine the vocabularies of New England farmers, fishermen, social leaders, laborers, and other groups.

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