essential element of scientific precision of investigation. It will be best, therefore, to confine ourselves to the results attained by the London Society of Psychic Research, since the experiments of this society have been conducted under strict test conditions, and the reputation of its members as working scientists gives a weight of credibility to their testimony. After the elimination of every imaginable source of error, results were attained which seem to prove incontestibly the direct intercommunication of mind with mind. These results are given in full detail in the published Proceedings of the society, but can be only briefly glanced at here. They consist of what is called thought transfer, mesmeric experiments, phenomena of apparitions and other strange conditions of mental manifestation.

In the thought transfer experiments we have striking evidence of the action of mind on mind without the aid of the senses. In these experiments objects, numbers, &c., were named, and drawings reproduced with no other guide than the mental concentration of the persons who alone knew the character of the object or drawing. The successful results formed so large a percentage of the whole as to leave chance quite out of the category. There seemed no room for doubt that the thought in the mind of the impressing persons had directly acted on the mind of the sensitive, without possible sensory connection. In explanation of these and other phenomena, Messrs. Gurney and Meyers offer a theory of telepathy, or direct communication of mind with mind without sensory aid. But their theory is imperfect in that it lacks the conception of any physical medium of intercommunication as here advocated.

(*To be continued.*)

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FLOODS, THEIR HISTORY AND RELATIONS.

BY WILLIAM HOSEA BALLOU.

FLOODS vary in their intensity and duration according to their geographical range. There are two great flood ranges in the United States lying nearly at right angles, one of duration and the other of intensity. The first is the Mississippi river and its confluents, and the second the Ohio and tributaries.

The Mississippi and Missouri rivers lie in a north and south line, and their floods are continuous from early spring until the middle of July, on account of the slow advance of the sun's heat

into the northern mountain and lake sources. While the floods thus formed are never of great height comparatively, yet their long continuation and force are means of most potent destruction.

The Ohio flood range is the most terrible on the earth's surface. The water waves generated by it surpass in height, size and power the greatest tidal waves of the ocean. All atmospheric destruction by tornado, simoon, whirlwind and waterspout, and all the damage done through subterranean upheavals by volcano and earthquake do not compare with the ravages of the floods of this river. Here is a stream lying nearly parallel with the equator, every portion of which is simultaneously affected by the sun's heat. When the temperate zone is turned toward the sun in the spring, the Ohio's ice, its entire drainage area and all its sources are let loose at once, and a sudden and awful destruction follows. At this time the Ohio is not a tributary of the Mississippi; the latter is its confluent. Its gigantic projectile of water, often 100 feet high, 600 feet broad and 300 miles long, is hurled on its mission of obliteration, sweeping before it cities, towns, forests, farms, levees, live stock, shipping and humanity. When it reaches Cairo it is re-enforced by the gradually forming floods of the Mississippi and Missouri, and there begins its unlocking of gigantic ice gorges which greatly increase its destructiveness. To protect the riparian country from these floods and repair their damages, the United States has expended $500,000,000. The individual losses sustained probably amount to twice that sum.

There is an intimate connection between floods and business. High floods and low business go hand in hand. The present financial depression was directly precipitated and perhaps caused solely by the last great flood at Cincinnati. That city was then—as in every spring time—largely in debt to New York, Chicago and other commercial centers, for merchandise. Owing to the condition of the roads and the losses of small riparian and dependent towns and cities from the flood, the Southern merchants could not collect on the products supplied by the North. They were therefore obliged to renew their notes. Then mercantile failures in the South precipitated a total loss on these notes, and the bankrupt era began to spread over the country. A large area of the South soon ceased to become a market for the North, cut-

ting off a part of the business of the latter and projecting a general stagnation. Capital, which otherwise would have gone South (which at that time was almost the sole region of investment) to aid in its development, was locked up in safe-deposit vaults and Government bonds, causing a bank scare and many bank failures. The depression soon spread to England and other countries. A retrospective glance into American history shows that great Ohio floods and great financial crises have gone hand in hand.

It is evident that having spent an entire century in trying, with no lasting effect, to repair damages done by floods, the country should turn its attention exclusively to their prevention. The methods of prevention are simple but expensive. Numerous reservoirs should be constructed among the springs in the hills, and little lakes in which to lock up the water. Great forests should be planted about the sources of the Ohio which will hold snow and ice unmelted for a long period, and allow it to escape slowly. In this way the sun will be made powerless to unloose the entire Ohio flood range at once, and the waters held subject to national control.

Congress has considered the question in its usual manner. It overlooked the facts presented above, and empowered the Engineer department to make surveys at the headwaters of the Mississippi for reservoirs. It might as well have gone to the headwaters of the Ganges, which have about as much to do with the destructive elements of these floods. It dropped $60,000 into this project and then dropped the subject. The future battle is the Ohio, not in Northern Minnesota or the moon. Congress will find it cheaper to purchase the land sources of the Ohio and its confluents, plant them with forests and wall them, than to plaster broken levees.

Professor Swing, of Chicago, has suggested that the high mounds of the mound-builders were used as protection against cyclones. He was obviously mistaken. There are no high mounds in cyclonic areas. We find them exclusively in riparian connection, where they were evidently intended for use in time of floods. These mounds were nowhere used to dwell in. None are found with entrances or hollowed out. When opened they either contain skeletons, implements, relics, pottery or nothing at all. Those unoccupied show that the owner fled or was captured

or was slain before his natural death, so that he could not be buried in his own tomb. The high mounds in the valleys served both to protect the dead from floods and as watch-towers in time of danger.

One of the remarkable aspects of floods is their influence on the formation of valleys. Nowhere is this more clearly shown than in the valley of the Mississippi below Cairo, over which the floods distribute themselves to a width exceeding forty miles in many places. This valley has a bed of alluvial silt deposited in past flood times increasing from forty feet at Omaha and Dubuque to 300 feet at and below New Orleans. In other words, the flood alluvial deposit of the Mississippi covers 80,000 square miles to an average depth of 170 feet, a surface equal to Montana. In this elastic valley the floods annually work out the destiny of the river's bed, which is often found miles from its previous course after high water.

The ice-gorges which dam up the rivers and hold back the waters for hundreds of miles are another destructive factor of floods. When they break the resulting destruction is enormous. Congress has only to supply its existing snag-boats with dynamite in order to destroy these before the damage force is accumulated. The Government signal service along the rivers can give warning of their formation.

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THE PROBLEM OF THE SOARING BIRD.

BY I. LANCASTER.

(Continued from p. 1058, November number.)

AS soaring is a phenomenon dependent entirely on bird and air, which are not connected with the earth, to avoid confusion it is best to pay no attention to the latter. For instance, a bird motionless in regard to a point on the earth facing a five-mile-per-hour breeze; the same bird moving in calm air at the rate of five miles per hour, or going with the wind at the rate of ten miles per hour, are identical in character so far as soaring is concerned. In each case the wind is meeting the bird at the rate of five miles per hour, and the differences of translation over the earth are accidental, not concerned with the mechanical activities of flight.