

has been proven time and time again. They have been observed feeding upon the chrysalises of butterflies and puncturing the heads of young fishes.

How far do mosquitoes fly? The question is of no little importance, for if mosquitoes fly great distances, exterminative work on the breeding places near a house or community is of slight avail. Most writers agree that mosquitoes will not rise or take flight when a brisk breeze is blowing, and that even in light winds they keep close to the ground. That mosquitoes do cling to the branches of trees during a wind has often been observed. They are so frail in structure that it seems impossible that they should be carried great distances by land breezes; for a long flight presupposes an ability to battle against wind which so feeble a creature cannot possess. But, although mosquitoes may not be carried along by winds, they are sometimes transported by railway trains to the despair of many country resorts. Mosquitoes are carried in cars for great distances and will start to breed in localities where mosquitoes are rare.

It is a much-mooted question among entomologists whether or no mosquitoes can breed in mud. Dr. Howard's experiments and investigations tend to show that the larvæ will live in wet mud for some little time and that they will even transform after water has been added. In no case were larvæ revived after the water had been drawn off for more than forty-eight hours.

ANOTHER ELECTRIC RAILWAY FOR LONDON.

Since the advent of the Central Electric Railway in London, innumerable schemes have been formulated for a further means of rapid intercommunication with all parts of the metropolis. Some have been practicable and useful, while others have been simply due to the imagination of fertile brains. But now a scheme has been formulated, which, if reduced to practice, would prove of inestimable benefit to everyone, both Englishmen and foreigners. It is proposed to link all the termini of the various trunk lines in London together by means of an electric railway. Unfortunately, London does not possess one huge depot in which all the railways converge, and thus obviate much inconvenience to those passengers who desire to change from one system to another, but they are distributed throughout the metropolis, and in some cases are as much as four or six miles apart.

With a view to surmounting this difficulty, and to bring the termini into close communication, two leading London engineers have drawn up the scheme in a terse and practicable manner. Their idea is to establish a central station in Piccadilly Circus, and from there to radiate tracks direct to the terminus of each trunk line, at a depth of 100 feet, or more, below the surface. When a train arrives at a southern terminus with passengers desiring to cross London to a terminus in the north, the steam locomotive will be simply detached at the southern terminus, the train lowered bodily by a huge electric lift to the underground system, an electric locomotive attached, the train hauled to the northern terminus, raised to the higher level again by lifts, another steam locomotive attached, and the passengers conveyed to their destination without experiencing all the inconvenience and trouble of changing their carriages.

It is estimated that a total length of 11 miles of railway will be necessary to connect all the termini together, while about 40 tunnels would ramify from Piccadilly. In addition to the central station there will be 17 local stations. One of the objects of the railway will be the rapid transit of fruit and fish to the markets of Covent Garden and Billingsgate respectively, the produce for which is at present conveyed through the streets. The Covent Garden station will be a great boon. About 1,600,000 tons of fruit and vegetables are carried to this market every year, and yet there is no railway facility to Covent Garden. Another station will be established at the General Post Office for the rapid conveyance of the mails to the trunk lines-termini. The greatest beneficial effect of the railway will be that it will relieve the existent too densely crowded streets of the greater part of the slow vehicular traffic. A company is being formed for the purpose of obtaining the necessary Parliamentary powers, and also to construct the railway. It is estimated that it will cost about \$150,000,000 to realize the scheme, but already the idea has found wide financial support.

MALARIAL INFECTION ON THE EAST COAST OF AFRICA.

The Malaria Committee of the Royal Society of London have received some startling information from Drs. Christophers and Stephens anent malarial infection on the east coast of Africa. According to their reports, the native races, and particularly the children, are extensively responsible for the infection, assisted by the mosquito. These two doctors state that they have found no native house the children in which were free from infection. The blood of the infants contains just what is essential for the transmission of human malarial poison by the intervention of the mosquito.

By some occult means the children experience an in-

teresting and perfect immunity from the effects of malaria. Young babies have been proved to be the most infectious, the inherent presence of the malaria gradually decreasing as the child grows older, and in children over twelve years of age, cases of infection were rare—the majority, on the other hand, appearing rather healthy. The huts of the native villages are infested with the mosquitoes, which during the daytime secrete themselves in all the nooks and crannies. A white man would enter a native hut, and, from a cursory inspection, would conclude that it was safe. But when the night came on, and the mosquitoes issued from their hiding places, the stranger would be attacked by the insects and would almost invariably contract the disease. Dr. Christophers contends that it is absolutely unsafe to sleep within one hundred yards of a native village. One of the observers made the experiment of sleeping close to a village without a net, and soon experienced the discomforts resulting from the attacks of the mosquitoes. By displaying every precaution, however, a white man may sleep night after night without experiencing any ill effects.

THE "DEUTSCHLAND" BREAKS TWO RECORDS.

The "Deutschland," of the Hamburg-American Line, made two records on her last westward trip, which ended on September 1. She made the voyage from Cherbourg, a distance of 3,050 knots, in five days twelve hours and twenty-nine minutes. This beats the "Kaiser Wilhelm der Grosse's" best record made November 15, 1899, by four hours and fifty-eight minutes. An average speed of 23.2 knots per hour was maintained by the "Deutschland" during the entire trip, which was a fraction better than the promise of her builders. The record of the daily runs was 337, 566, 570, 570, and 584 and 423 knots. The "Deutschland" exceeded by 4 knots the greatest distance ever sailed in twenty-four hours. The "Kaiser Wilhelm der Grosse" made 580 knots on one occasion. The "Deutschland" now holds six records. First, the voyage from New York to Plymouth on August 14, the time being five days eleven hours and forty-five minutes, which was better by two hours and twenty-one minutes than her previous record of July 24. Second, her voyage from Plymouth to New York, completed on July 12, in five days sixteen hours and forty-six minutes, being her maiden trip. Third, her voyage from Cherbourg to New York made in five days twelve hours and twenty-nine minutes. Fourth, her best hourly average 23.32 knots recorded for the voyage ended at Plymouth August 14. Fifth, best day's run 584 knots on August 30. Sixth, the best time for a maiden trip made between July 6 and 12. On the last voyage, the engines exerted 36,000 horse power and 600 tons of coal were burned per day. The engineers of the "Deutschland" believe that the ship has "found herself" and that in a short time she will break more records.

THE GREAT ARARAT ASCENDED.

The Ararat Mountains in Armenia comprise two peaks situated seven miles apart. They are known as Great and Little Ararat, and are respectively 17,260 and 14,320 feet above the plain. They partially belong to three countries, Russia, Turkey and Persia. The mountains are covered on the tops with perpetual snow, ice and glaciers. The summit of Great Ararat was reached in 1829 by Prof. Parrot, and on September 2, 1900, a member of the Russian Geographical Society named Peoggenpohl ascended the peak with a considerable party. The difficulties of the ascent are very great, and his successful expedition will be welcome news in geographical circles. Ascents are rare, having been made in 1834, 1843, 1845, 1850 and 1856. Little Ararat is even more difficult to climb, as its declivities are greater and steeper, its form being almost conical. It is believed to be the spot where the ark rested, but there is a tradition that Mount Judi in southern Armenia was the spot. The mountain is of volcanic origin and was in eruption in 1785, and in 1840 there was a vast discharge of sulphurous vapors from its sides, and a tremendous earthquake shook the surrounding country. There is considerable literature devoted to the mountain.

THE DUKE OF ABRUZZI'S EXPEDITION REACHES THE HIGHEST ALTITUDE.

All those who are interested in Arctic exploration will be glad to learn of the return of the "Stella Polaris" with the Duke of Abruzzi's Arctic exploration party. The sledge party reached a point farther north than Nansen, 86° 33' and was gone 104 days. The "Polaris" was caught fast in the ice and held for eleven months, stoving in her sides and inflicting other damage. The members of the principal sledge party suffered the usual hardships which fall to the lot of the Arctic explorer, being forced to eat their sledge dogs for food; three of the party perished. Reports, meager in their details, have been received from Tromsø. The Duke's equipment was admirable and he did not attempt to reach the pole by the Nansen plan of approaching by the open sea or by drifting, but relied upon sledge trips. The scientific value of the Duke's expedition will probably be considerable, as the

members of the party were provided with the best instruments obtainable.

SCIENCE NOTES.

The small planet No. 444, which was discovered by M. Coggia at Marseilles on March 31, 1899, has been named Gyptis.

The presentation of the awards of the Paris Exposition was an elaborate ceremony. A number of decorations of the Legion of Honor have been distributed.

The sewers of Munich discharge their contents directly into the river Iser. This river flows so rapidly and its volume is so considerable, that there has been no sensible deterioration in the river water. As a precaution, however, the building of a catchpit to remove heavier matter is contemplated.

Dr. R. Uhlenbuth describes a simple method of preparing free hydroxylamine, which consists in heating hydroxylamine phosphate gently under reduced pressure. It is stated that the hydroxylamine distills over in a state of extreme purity, the distillate solidifying if the receiver be surrounded by melting ice.—Annalen.

The panorama of the Battle of Champigny, by the great French military painters De Neuville and Detaille, has had a checkered career. When the panorama ceased to pay, it was cut into pieces and the groups were sold separately. The central scene was exhibited in several French towns and was finally pawned. It is at present in the section known as "Old Paris," at the Exposition.

MM. Desgrez and Balthazard state that they have discovered a method of regenerating air in confined spaces. They have submitted to the Academy of Sciences aluminium diving dresses weighing 25 pounds. They state that the diver can move in this suit for hours under water without drawing air from the surface. The principal regenerating agent seems to be sodium dioxide. It is said that the invention is applicable to submarine work, poisonous atmospheres in mines, submarine warfare, and certain chemical industries.

E. Gain has examined the structure of the embryo of grains of wheat and barley obtained from Egyptian mummy cases, and finds that although the grains have undergone but little change in external appearance, and the reserve substances have retained their chemical composition, the chemical composition of the embryo has been completely altered, and it is no longer capable of development. The dormant life of the seed must long ago have expired; and M. Gain regards this observation as entirely disposing of the apocryphal statements that these seeds can germinate after thousands of years.—Comptes Rendus.

After the dispersion of a French exploring expedition under M. Blanchet in the Western Sahara, and the imprisonment of its leaders by the Chief of Adrar, the French public must have learnt with satisfaction that the three military expeditions dispatched to Lake Tsad effected their junction on April 21 at Kusuri on the Shari. Lieut. Joalland, of the disastrous expedition originally sent out under Capt. Voulat, was the first to arrive. M. Foureau and Major Lamy followed; and when M. Gentil, coming from the south, joined their forces, the French were in a position to bid defiance to the usurper Rabah of Bornu, whom they defeated in a pitched battle. Rabah himself was wounded, and, after the fashion of Duncan of Knockdunder, a French tirailleur cut off his head. Major Lamy, the leader of the united forces, was mortally wounded.

The uses of monochromatic light in optical experiments are so numerous that considerable interest attaches to the paper, on the means of producing such light, by MM. Charles Fabry and A. Pérot in the Journal de Physique for July. After pointing out the disadvantages of sodium light on account of the proximity of the D lines, the authors divide the methods of producing a beam of monochromatic light into two, viz: (1) Simplification of a beam of white light, and (2) use of light emitted by a gas. Under the later method are included (a) flames; (b) gases or vapors rendered luminous by electricity; (c) induction sparks; and (d) the electric arc. In connection with (b) it is found that the quality of the rays depends on the nature of the current exciting them, and the authors consider the use of (1) a coil with secondary condensers; (2) alternating currents; (3) continuous currents. Of these methods the last is the best, though the second is better than the first. While the results of these investigations cannot be briefly summarized, we notice that the authors have shown the possibility of improving the action of Michelson's tubes, of using a modification of the mercury arc of Arons as a source of monochromatic light of great intensity, of using the rays of a certain number of metals for interference observations where the difference of path is considerable, and, by measuring the wave-lengths, of adding a number of new fixed points on the spectrum. The paper concludes with a table of wave-lengths determined by MM. Pérot and Fabry, and comparison with the determinations of Michelson.