"Belleisle" when she is under fire, and secure the enormously valuable data which can only be obtained in this way, we shall remain in comparative ignorance of the actual destructibility of modern gun fire. At the same time it is probable that public sentiment would array itself strongly against the proposal to risk the sacrifice of human life in such an experiment.

GEORGE M. HOPKINS.

It is with most profound sorrow that we record the decease on the 17th inst. at Cheshire, Mass., of Mr. George M. Hopkins, so long identified with the SCIENTIFIC AMERICAN as Associate Editor.

It was while enjoying a vacation trolley outing with his wife in this beautiful locality among the Berkshire Mountains that Mr. Hopkins became suddenly ill on the 15th, and despite the best medical treatment, never recovered. His sudden demise will be a great shock to his intimate associates in the SCIENTIFIC AMERICAN.

Mr. George M. Hopkins was born in Oakfield, Genesee county, New York, November 21, 1842, and while a lad went with his father and family to Albion, Orleans county, New York, where he received the usual public school education. He early displayed a liking for mechanics, having a natural ability to discover the reason of things in a mechanical way as they were studied. His father encouraged him to pursue matters to his liking by having him obtain practical information in the workshops at Albion.

On May 10, 1864, he was married to Helen M. Mills, daughter of Dr. A. B. Mills, of Albion, N. Y. Later, in 1866, we find he was granted his first patent for an apparatus for turning leaves of music, after which followed some forty-three other patents; among them, in 1871, was an electro-magnetic sewing machine, and from 1880 to 1885 he was granted two patents for telegraph relays, five patents on telephone transmitters and two patents on telephone receivers. His telephone transmitter patents were acquired by the People's Telephone Company at that time and their utility was well demonstrated. He was also interested in gas engine construction and secured several patents in that line, showing that his activity as an inventor never failed him in whatever branch he applied his mind.

He early made the acquaintance of Thomas A. Edison, in whose laboratory he worked, and the friendship continued throughout the epoch of the telephone and electric light development, and to the present time.

On May 10, 1876, he became connected with the SCIENTIFIC AMERICAN, beginning his work as an attorney in the Patent Department; it was soon noticed that he evinced a fondness for experimenting in matters connected with physics, especially in a more simple and direct way than was customary. He was encouraged in this work and from time to time the results were published in the SCIENTIFIC AMERICAN. The experiments were so simple and clear that any boy could understand them. The value of the published experiments was that they were based on actual manufacture of the apparatus and trial before publication. It is needless to add that these many different publications formed the nucleus of Mr. Hopkins' popular book, "Experimental Science," which has been of such assistance to many thousands of students of physics.

Some months ago Mr. Hopkins undertook a thorough revision of the book, with a view to bringing it up to date, that many of the remarkable discoveries of the last few years might be included.

It is a great gratification to feel that this work was entirely completed, and that the proofs had been thoroughly revised and read by Mr. Hopkins before he started on his vacation several weeks ago. The popularity of the work is shown by the fact that the twenty-third edition has just been published. Our illustration is from a recent photograph and is regarded as an excellent likeness of Mr. Hopkins.

Of late years he gave particular attention to literary work, editing the special department of "Notes and Queries," and contributing to our columns a series of scientific articles which were marked by the clearness and brevity by which his work is easily recognized. Mr. Hopkins possessed in a marked degree the literary qualifications of a scientific writer. To his simplicity and clearness of style, no doubt, was largely due the great popularity of his writings, which attracted and held the interest of the widely diversified classes of readers who were interested in the subjects he discussed and subscribed for his published works. It is certain, moreover, that his directness and purity of style were one expression of the character of the man himself; for our late associate was possessed of sterling traits that won for him the invariable respect and admiration of all those with whom he had business relations.

His disposition was most kindly, amiable and attractive. He was ever ready to render assistance and freely impart such knowledge as he possessed.

Mr. Hopkins occupied his leisure hours with the practice of photography as a stepping stone for the study of art. He enjoyed painting small pictures as a pastime, using his photographs as a guide. He was fond of broad effects. On another page we give his method of producing them.

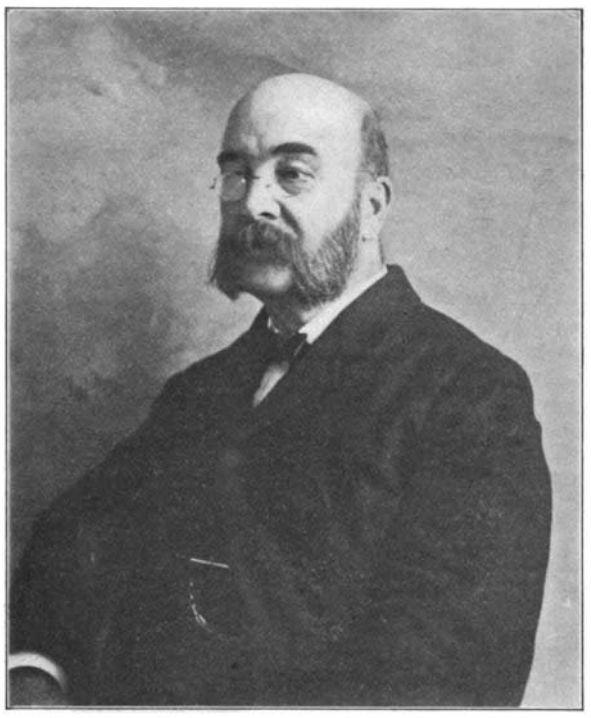
He was a member of a number of societies. His residence was in Brooklyn, New York, where, we are informed, he left a most remarkable collection of scientific apparatus, which exceeds in interest the equipment of many institutions of learning.

He leaves a wife and one son, Mr. Albert A. Hopkins, who was formerly with the SCIENTIFIC AMERICAN for several years and is author of "Magic" and "The Scientific American Cyclopedia of Receipts, Notes and Queries." One brother, Mr. I. N. Hopkins, also survives him.

Mr. George M. Hopkins was greatly beloved in the church he attended in Brooklyn and was held in high esteem by all who knew him. We shall miss him and we know our numerous readers will, but we believe the work of his life, "Experimental Science," will live and the memory of his name will endure with it as one who knew how to teach science with rare simplicity.

THE LAYING OF A PACIFIC CABLE.

The President has consented to authorize the Pacific Commercial Cable Company to lay a cable across the Pacific to the Philippines, thus ending the fight which has been waged for fifteen years by rival firms. The Mackay-Bennett Company will probably soon begin work. The route to be followed extends from San Francisco to Guam and thence to Manila. The estimated time of laying the cable is fourteen months from the beginning of the work. Heretofore all messages have been sent to the Philippines over an English line from Hong Kong. The owners of this line have a franchise monopoly granted by the Chinese government. Under the favored nation clause of the



GEORGE M. HOPKINS.

treaty between the United States and China the American government has the right to claim a similar franchise for an American cable company. It is expected that advantage will be taken of this treaty relation, for by getting a terminal in China the cable company will obtain 700 miles of new cable lines. The Pacific cable will then connect with the Atlantic cable lines in China so that messages can be sent to all parts of the world by American cables.

ELECTRIFIED HOUSES.

An instance of non-familiarity with simple scientific facts is illustrated by an article that goes the rounds of the press once or twice annually, namely, the story of the electrified house. The article usually states that some one has discovered that everything he touches in his house, the radiators, picture frames, banquet lamps, etc., give him an electric shock. Hence, he fears there is some connection between the arc-light wires and the water pipes near his residence. The electric light inspector is, therefore, summoned, and reports that the wires of his company are intact and that e electricity must come from some other sourc does not dawn on any of the people consulte the discoverer of the phenomenon is unconsci erforming one of the simplest and oldest of e atic experiments, the shuffling of his shoes ov dry carpet raising the potential of his body eral thousand volts, which discharge at every op y. One may even get electric discharges from ckles to the brass lock of a hand-bag which he be carrying while walking on a stone pavement cold, dry weather. But, dismissing newspaper it is somewhat astonishing, in view of the ways in which in cold, dry countries electricit nintentionally developed and manifested by sparking, that the first knowledge concerning this phenomenon did not come to the ancients in this way rather than by the attraction of light substances by amber. The explanation of this, however, may be that the scientists of bygone days did not reside in cold, dry countries.—Cassier's Magazine.

SCIENCE NOTES.

The radiations of radium have proved to be of rare value in medicine. It is found that a metallic screen interposed between the eye and a vial containing radium in no way prevents the healthy eye from seeing it. If the retina of a blind person be healthy, it will be effected by radium rays even though the cornea be opaque to light rays. Consequently the radiations from radium can be used to discover whether or not the retina of a blind person is healthy.

The expedition dispatched last summer to Gambia, on the West Coast of Africa, by the Liverpool School of Tropical Medicine has discovered another malaria-spreading animal, the parasite trypanosoma. This parasite resembles a minute worm, and is very similar to the blood parasite which is the cause of the devastating disease prevalent among cattle, horses, etc., and in Africa, India and other tropical countries known as the tsetse fly disease, nagana and surra. In the case of animals it has been proved that these diseases are communicated through the agency of certain biting insects, such as the tsetse fly. The expedition discovered the trypanosoma parasite in the blood of a native child. Since the return of the expedition a special study of the question has been made at the laboratories of the Liverpool school and it has now been resolved to dispatch a further new expedition to the West Coast to investigate the conditions in which the disease occurs in both Europeans and natives and its distribution, and also to ascertain how it is conveyed from man to man; whether by biting insects or by other means.

The fitting out of the Scottish South Pole Expedition, which is to be carried out under the auspices of the Scottish National Antarctic Expedition, is rapidly approaching completion. The expedition is to be under the command of Mr. W. S. Bruce. The Norwegian whaling vessel "Hecla," renamed the "Scotia," purchased to carry the party, is now being reconstructed on the Clyde, at Troon, under the superintendence of Mr. G. L. Watson, the well-known yacht designer. The "Scotia" is a bark-rigged auxiliary screw steamer of about 400 tons register. New deckhouses are being built, a larger one aft and a smaller one forward divided into a laboratory and cook's galley. A second laboratory and a dark-room are being fitted between decks. The ship is being specially fitted to carry on oceanographical research, both physical and biological. Two drums, each containing 6,000 fathoms of cable, for trawling in the deepest parts of the Southern and Antarctic oceans, are being taken. The expedition intends to follow the track of Weddell, and to explore the Ross deep, working eastward from the Falkland Islands.

The Zoological Garden of London has lately received a young animal known as the Panda. This animal, a small mammifer of the Procyonidæ family, constitutes a unique species in the genus Aelurus (*A. fulgus*), and comes from the Himalayas, where it is found at altitudes varying from 6,000 to 11,000 feet. It is also found in the mountains to the north of the Assam as far as the Yuman region. Its ordinary name is "red cat-bear," the name being due to its appearance and its plantigrade walk, also to the reddish color of the fur. The Aelurus genus exists in the fossil state, and one species, that of the *A. Anglicus*, is found in England in the pliocene layers. The Panda is not often seen in Europe. The first specimen which arrived at London was sent in 1869, but its two companions died *en route*. The survivor did not live longer than seven months. It was made the subject of careful observations by zoologists, especially by Sir William Flower and Mr. A. E. Bartlett. It is interesting to note that the Panda now in London often uses his forepaws like arms and hands. Mr. Hodgson, who observed the species in the East Indies, never saw the Panda act in this way and use his anterior members to seize objects. A second Panda was sent to London in 1876. The habits of the animal are nocturnal, and during the day he sleeps almost constantly. He seeks his nourishment in the evening or very early morning, living upon herbs, buds, roots, and will also eat eggs and insects. The character of the animal is rather mild; the large claws with which his fingers are provided are used not for attack or defense, but mainly to climb trees, in which he passes a good part of his time, except in the periods when he seeks his food, this being generally obtained on the ground. He is not timid, but does not like to be touched. When a person extends his hand toward him, he sits down, and agitates his arms as if to strike, but his anger is short lived and he allows himself to be observed without much inquietude.