Correspondence.

A Bird Tragedy.

To the Editor of the SCIENTIFIC AMERICAN:

Several persons waiting for a Brooklyn Bridge car a few days ago saw a battle royal between a number of English sparrows that ended in the electrocution of four of the little warriors. The fight took place in the Manhattan end of the bridge, where the bridge cars are switched from one track to the other. It was during a dull hour in the morning, and but few persons were watching the feathered fighters when the tragedy occurred.

As all who travel on the bridge know, the third rail runs through the bridge, and in the yards at this point is labeled in large white letters on a red background "Dangerous." Between trains a score of angry sparrows flew beneath the roof, making a great noise and attacking one of their number with great fury.

As several of the birds lit on the third rail and the track rail next to it, the mass of little fighters rose clinging to one another, all pecking and chirping. In this way a circuit must have been formed, for suddenly there was a blinding flash that made the spectators close their eyes and which attracted the attention of one of the guards, who ran to the spot. He found two of the birds had been burned to a crisp. One was singed badly, and another was dead without a mark on it. Two others which had been stunned fluttered away before they could be caught.

24 Garden Place, Brooklyn. E. W. KELLY.

Power from Rivers.

To the Editor of the SCIENTIFIC AMERICAN:

With the method of obtaining power from river currents described by your correspondent in your issue of January 25, there are some, but not many, localities where the results would justify the cost.

The screw wheel or windmill universally employed for obtaining power from the wind is the cheapest appliance for obtaining power from a free stream (power from a river without building dams).

Place an ordinary iron or steel windmill wheel in a river running five miles per hour and it will yield at least ten times as much power as in the average wind and furnish force at about one-fourth the cost of steam.

When used as windmills these wheels are often idle, and at times damaged by hurricanes. In a deep river they would work all the time and never be subjected to excessive strain.

Owing to the ever-varying direction of the wind these wheels, when used as wind motors, cannot be economically grouped or massed in one spot, and are therefore available only for small users of power. But in the water enough of them can be grouped on long arms reaching out from shore or from a pier, crib or old steamboat hull to furnish 500 horse power in one spot. This is, of course, too little for some users but sufficient for the great majority and better for the people, for it would scatter them along the shore instead of huddling them in large cities.

Three hundred horse power is now taken from the current of the Danube at the Prater Ufer just below Vienna, Austria, though they have there made the great mistake of using the undershot wheel instead of a screw. A screw will furnish about six times as much power as a paddle wheeel of the same blade surface.

The full utilization of the cheap power of swift rivers would shift manufacturing centers to such an extent as to change the rank of States and nations, and would make each shore of a rapid river one continuous town. S. N. STEWART.

Brooklyn, N. Y.

Launch of the "Kroonland," the Largest American Steamer.

On the forenoon of February 20, the "Kroonland," the largest American steamship ever built was launched at Cramps' Shipyard, Philadelphia. The vessel is 580 feet long, or 26 feet longer than the St. Louis or St. Paul, and has a tonnage register of 12,000. Her speed will be 17 knots.

The promenade, the upper, and the saloon decks are utilized for the accommodation of passengers. All first and second cabin saloons and state-rooms are located amidships, where the motion is less felt than in any other part. The interior rooms, in many vessels so dismally dark as to require artificial illumination, are lighted by oval glasses.

The vessel has accommodations for 343 first-class passengers, 194 second-class passengers and about 1,000 third-class.

The launching was not accompanied without difficulty. The tallow on the ways had frozen; and the "Kroonland" had to be pushed into the water by hydraulic jacks.

Harvard University will probably send an expedition to explore Egypt, Babylonia, Assyria, and Palestine for Semitic relics.

Engineering Notes.

Consul-General Bray reports from Melbourne, November 10, 1901, that the Eastern Extension Australasia and China Telegraph Company, Limited, has notified the government of the State of Victoria that the Cape cable from Durban (Natal) to Freemantle, Western Australia, is now ready for use, and congratulatory messages have been exchanged with the government of Cape Colony, Natal, and Mauritius. The section of the cable between Freemantle and Adelaide, South Australia, is now in course of construction.

The construction of twenty new warships for the British navy has just been begun, in accordance with the recent naval estimates. Several of the vessels are being built in the royal dockyards, and the men are working overtime in order to get the arrears of work out of hand ready for the new building. The majority of the vessels are to be first-class cruisers, which the recent naval maneuvers emphasized as being urgently needed. Some dockyard extensions are also contemplated in order to increase the output of future years, to keep pace with European building. Provision is also being made for submarine construction. High speed will be developed in all of them. The orders for boilers are to be held back, owing to the investigation into the Belleville boilers by the special Parliamentary committee selected for the purpose, and whose report has not yet been delivered.

An article recently published in Lightning gives the following interesting facts in regard to Nernst glowers; "With earths like lime, magnesia, zirconia and thoria, the greater the purity the greater the conductivity at high temperatures, but by adding small quantities of certain oxides, such as those of chromium, manganese, uranium, titanium and niobium, glow-bodies are produced which are more stable, can be excited at a lower temperature and have a high illuminating power. A suitable mixture is: Zirconia, 90; magnesia, 5; lime, 4; sesquioxide of manganese, 1; made into a paste with sirup and squirted into rods. The Nernst Electric Light Company, Westminster, English patent 13,839, 1900, hardens its filaments by baking at a high temperature in an electric arc between carbons separated about three-eighths of an inch. The radiating surface is increased by making the cross-section elliptical or flat, with rounded or square edges. Another form is ribbed, with or without a central hole."

The central London Electric Railway, familiarly known as the tube, contemplates extensive developments in connection with its service which will benefit the rapid transit in London to an enormous extent, and which when completed will somewhat interfere with Mr. Yerkes' Electrified Underground Railway. Last year this railroad carried 91,000,000 passengers over its short run of 6½ miles; and in view of this tremendous traffic, and the fact that it is impossible to supply a faster service of trains, owing to a certain amount of time that is lost by switching at each terminus, the company proposes to extend their system to make a complete circle. This will be accomplished by the construction of a couple of new tubes, each 8 miles in length, which will run parallel to the existing line east and west, forming a new inner circle 14 miles in length. The projected route will extend from the city terminus at the Bank via Queen Victoria Street, Upper Thames Street, Ludgate Circus, Fleet Street, the Strand, Piccadilly, straight on to Hammersmith, where it will curve round to join the present system at Shepherd's Bush Station. At the Bank terminus another station will be built close to the existing one; and in order to complete the circuit of the system there will be a loop line running from one Bank station to the other, via Liverpool Street—the terminus of the great trunk railroad serving the eastern counties of England—and St. Mary Axe. When this is done the tube will serve the busiest trade centers in the heart of London, and it will more than double the stations which now connect the city with the West End. By the construction of this extension the London termini of six of the principal trunk railroads extending to all parts of the country will be linked up. Communication between the city and Piccadilly Circus, Hyde Park Corner and other West End centers is at present only maintained by the slow omnibus. By this new route the distance will be immensely shortened, and the "Underground," even when "electrified," will lose a large portion of its West End traffic. The new tube will be constructed on exactly the same lines as the existing one, with certain minor modifications which experience has shown to be desirable. The electrical energy will be generated at the Shepherd's Bush generating stations, which supply the present system; only the machinery will be duplicated. The cost of the undertaking is estimated at $17,500,000. The fare will not be increased from its present rate of four cents for any distance. It is estimated that the work of construction can be commenced in eighteen months' time, and that it will take three and a half years to complete.

Electrical Notes.

Copper or lead in small amounts can be removed from mercury by putting it under warmed diluted nitric acid, stirred at intervals of one-half hour for four hours. Lead in larger quantities is removed from mercury by retorting, the mercury being covered to the depth of about one and one-half inches with powdered charcoal.

Consul-General Guenther reports from Frankfort, December 4, 1901: The Frankfurter Intelligenz-Blatt of this morning states that the railroad management at Cassel calls attention to the order that American petroleum is to be used only for office lamps and signal lanterns, and then only if Russian petroleum does not produce a sufficient light. The Minister of Public Works has of late repeatedly ordered that only Russian petroleum be used; stating that, as in fifteen railroad districts it has been employed with uniformly good results, it must be taken for granted that at offices from which complaints have been received the lamps have not been properly cleaned.

The London County Council, in view of the Highways Committee's favorable report on subways and "shallow" tramways, has decided to apply for the necessary Parliamentary powers to construct such means of rapid transit in London. When this has been obtained the work of construction will be commenced. The Council proposes to construct an experimental subterranean tramway from the Victoria Embankment, under the new street to Holborn, under Southampton Row, and to connect that tramway with the other routes which converge on Theobald's Road. This is the only means of satisfactorily relieving the congestion of traffic of the streets, whose surfaces are at present inaccessible for tramways. The cost of the experimental undertaking is estimated to be approximately $1,250,000.

By the recent opening of the Cape Australian telegraph cable as far as Perth, West Australia, practically the whole of the British possessions are now linked together by telegraphic communication. For this Cape Australian section, nearly 15,000 miles of cable have been used at an expenditure of over $15,000,000. By this latest achievement the whole cable between London and Australasia is in British hands entirely. By next February the cable will be extended to Adelaide. This new cable route opens a more direct means of telegraphic communication with Australia. The messages will be transmitted from London to Porthannon in Cornwall, thence straight to Cape Town via Madeira, St. Vincent and St. Helena. From Cape Town they will then be transmitted overland to Durban, the South African terminus of the new Cape Australian route, thence direct to Mauritius, Rodriguez, Cocos Island, and on to Perth, Adelaide, Sydney and New Zealand.

Judicial proceedings in the case of boiler explosions in England are very searching, and go upon the principle that some one is to blame for them; apparently every one at all connected with the disaster has to show that he personally did not cause it. In a recent case of the kind alluded to, a boiler which had been in use for periods unknown finally succumbed to the strain, causing much damage to surrounding property. In the proceedings it was found that a considerable portion of the shell was only one thirty-second of an inch thick, but the owner had called in a firm of engineers to examine the boiler and repair it. The workman told the boiler owner that he must not carry over twenty-five pounds per square inch on it, but even this did not avail to prevent accident. The counsel in the case charged that the workman had no right to make any statements as to the pressure to be carried, and the engineer firm that employed him had to pay $50 for his excess of zeal in giving any advice whatever, claiming that he was employed only to drive rivets and not to act as a consulting engineer.

A memorial to the late Sir Joseph Bazalgette, the eminent engineer who revolutionized the drainage system of London and who designed the Thames Embankment, was recently erected in London. The monument stands on Victoria Embankment opposite the fashionable thoroughfare, Northumberland Avenue. It is a mural design wrought in veined Sicilian marble, containing a portrait bust in bronze of the deceased engineer. The base of the monument, rising from a sub-base of granite, consists of a carved panel embodying in arabesque design the symbols of Science and of Labor, while the central ornament from which these enrichments spring is formed by three dolphins, emblems of the tidal river. Sir Joseph Bazalgette reconstructed the whole of the sewers of the English metropolis. He built his lines a little below the old drainage system and transferred their former outfall in the river Thames, from their original point to another at Barking and Crossness Point, 14 miles farther down the river. The magnitude of the task may be comprehensively realized from the fact that there were fifty main sewers on the north and twenty on the south side of the river. Through these drains were carried and emptied into the Thames about 31,650,000,000 gallons of sewage per year.