Correspondence.

The Editors are not responsible for the opinions expressed by their Correspondents.

Changing Pay Day.

To the Editor of the Scientific American:

By almost universal consent and usage, Saturday or Saturday night is the time when the great majority of working people are paid off. The custom, we believe, was imported from the European countries, where it has existed for an indefinite period. Lately, in certain sections of the Queen's dominions, the propriety of changing pay day from Saturday to Monday has been seriously discussed, and so far put to test as to conclusively prove the wisdom of the change.

The reasons specified were principally in the interest of the employed, who were habitually given to squandering on Sunday the wages in hand at the recurrence of the weekly holyday, thus perverting it into a mischievous holiday; but the result has also proved advantageous to the employers and to the community beyond, as will be shown.

First, as to the benefits to the employed: When they receive payment on Monday or Monday night, they have literally no time for carousal and debauching indulgences that would unfit them for the next day's work. Those with more self respect are not generally left with sufficient means, after providing for family expenses, to indulge in the numerous costly pleasures prepared in numberless blazing shop windows on Saturday nights, or which beckon in all directions on Sundays, in the form of excursions, sights, etc., which nearly always emptied the laborer's pocket of the small surplus that, if he were paid on Monday, would be more likely to get into savings bank, or, in some other form, provide for future comfort.

The good sense of reflecting people will approve this system and see, doubtless, what encouragement the change will indirectly be giving to the weak and wavering among our own population, that now find it so hard to deny themselves stimulants, finery, or foolish outlays by the score, when Sunday, with its leisure and opportunities for idleness, indulgence, and display is just at hand, and when the price of all they covet is just paid to them. The diversion of a large percentage of wages, now absolutely squandered on Sunday, might, by changing pay day, be at once secured to its proper and rightful appropriation, namely, the comfort of families that, under the present system, sooner or later come to want and beggary. I believe, further, that it would operate directly and disastrously upon liquor establishments and drinking places of every grade, for credit is not popular in such houses; the laborer is welcome there only when his money keeps him company.

Beyond these mere glances at the physical benefit to the employed and their now cheated families, and passing by the yet mightier moral effects herein involved, let us see what the employer and capitalist would gain by the change.

If labor is capital to a considerable extent, then a simple gain of reliable capital, in the shape of sober, rested workers, instead of sleepy, half drunk, enervated make believes, would be an item worth considering. The peace of mind following established confidence in the general sobriety and faithful appearance of the hands is an appreciable consideration, appealing to individual employers to try the change of pay day. The loss of time and the failure to meet contracts on account of the delinquencies of working men who despoil themselves over the Sabbath appeal to the credit of manufacturers, head mechanics, and all grades of employers to devise a new system alike beneficial to themselves, their patrons, and their employees.

I have the utmost faith that a simple measure that will "stand to reason," as this does, and that has been proved a success when tried, will arouse discussion in our own community, as well as elsewhere, and receive the practical approval of the parties most directly to be benefited.

Kingston, N. Y. M. M. S. F.

Japan as a Field for Employment.

To the Editor of the Scientific American:

Several letters from America and Europe have been directed to me by parties in search of employment. I can only say, very briefly, that this country is already overstocked with foreigners out of employment. I should advise no American to come to Japan, unless he has a position secured before he comes. A man can do well here if he comes to Japan having been appointed in America. It gives him *prestige* over those who are trying to get employment here. As you see by the appended note [printed elsewhere.—ED.], the English have the lion's share in the railroad undertakings, the Mint, the Lighthouse Department, the Navy, and in many other branches of enterprise. Yet the large majority of the unemployed foreigners here are English. In educational and agricultural matters the Americans take the lead, in military, the French, in medicine, hospitals, etc., the German.

In regard to men appointed to offices with high sounding names and large salaries, I am afraid many people will be disappointed concerning Japan. The Japanese simply want helpers and advisers. They propose to keep the "bossing," officering, and the power all in their own hands. Some disappointment and a little profanity has been indulged in by certain people who deceived themselves by supposing the flattering Japanese to mean all that their polite words said in America. All this "taking charge of," "being at the head of," "organizing," etc., is shear day dreaming. People from America and Europe must remember that "there were brave men before Hector;" and a few foreigners have been laboring in Japan for years, and with knowledge of the language, etc, have helped the Japanese to help themselves. Many who come here to "organize," etc., find that things are already organized as much as they can be under the circumstances, and that all that new comers can do is to wait quietly until perchance they gain the confidence of the Japanese, and even then all they advise is by no means adopted. Nearly every appointee comes here to "revolutionize" his department, but the Japanese don't want that. They want the foreigners to get into the traces, and pull just so fast as, and no faster than, their mighty enterprises can bear. Let it not be forgotten that this country is an emphatically poor country now, and that millions of its people are very ignorant, and that it has just emerged from feudalism; and that therefore the rulers of Japan must go slowly and cautiously. Above everything else, it is not wise to put their soil or their enterprises too much into foreign hands, and to prove that Japanese nature is human nature, they like to do it themselves, to play with their own toys, and to run their own machines. Therefore, if a man means real hard work, that takes off its coat, and is willing to run the risk of going hungry occasionally, and if he has patience enough to wait until an experience-taught people can trust him, and if he isn't a born brigadier general, and is willing to help without "taking charge" of everything, let him try Japan. If he expects that the Japanese people wish to make him a Secretary of State, or Minister of Education, or Postmaster General, etc., he had better stay at home, because the Japanese people like to be officers themselves, and are neither children nor weak minded. Neither exaggerating nor discouraging, I remain, Mr. Editor,

Yours very truly, W. E. G.

Yedo, July 19, 1872.

Ball Lightning.

To the Editor of the Scientific American:

In reference to J. H. P.'s letter upon lightnings, on page 148, let me say that in midsummer, several years since, there was an exhibition of this kind of lightning. I was at a farm house in northern Ohio; a black cloud hung over a wood, perhaps a hundred rods away and directly across the road in front of the house. Another cloud hung directly over or a little back of the house; both clouds appeared to be unusually near the earth. My position was on the "horse block" between the two clouds. Suddenly a ball of light, dazzlingly brilliant, rushed from the cloud over the wood, passing directly over my head, and disappeared with a loud report in the cloud over the house.

Under the impulse of the moment I ran into the road to get a better view of the destination of the ball; while others present ran into the house and locked the doors, so violent and so very near seemed the noise. J. H. P. may depend (and it can be proved satisfactorily) that the above is "testimony worthy of credit," as far as dazzled eyesight, backed by a cool head, can determine. C.

Cleveland, O.

The Remarkable Gas Well at Painesville, Ohio.

To the Editor of the Scientific American:

Having recently spent a few days at Painesville, Ohio, I visited the celebrated gas well of General J. S. Casement, located on the farm of the Hon. C. C. Jennings, about one mile from the city.

Our party, in charge of Mr. Daniel Casement, brother of the General, arrived at the place just as the lamps were being lighted, and were most cordially received by Mr. Jennings, to whom we made known the object of our visit. We were shown into the sitting room, and were soon seated around one of the fireplaces common to many primitive western homes. Before us was, to all appearances, a small wood fire. Upon inspection, however, our wood proved to be imitation logs, made of metal, and the fuel, gas. By the turning of a small stop cock at the side of the fireplace, our genial fire became a roaring flame, making it almost uncomfortable for us in the farthest part of the room. We next proceeded to the kitchen, where we found that all the cooking was done by the same agency, the gas being introduced into the range, and consumed through peculiarly constructed burners. These burners are arranged in six parallel lines, about one inch apart, and cover about two thirds of the fire plate. The form of the burners resembles the argand in construction. Passing from the old to the new house (which, by the way, though unfinished, is considered to be one of the most complete structures of the kind in the State and, we doubt not, in the West), we here found nearly all of the rooms arranged to be heated by steam and containing also fire places and firelogs. We now descended to the basement to inspect the furnace. The burners used here are the same as in the range, but greatly multiplied. The roaring of the flames under a full head of gas was awfully grand. After the fire was extinguished, the gas was again turned on, to show us the nature of the article. The smell resembles that of the most refined kerosene oil, yet it is not at all offensive. It has not yet been analyzed, therefore I am unable to state its constituent parts.

As to the origin of the well, Mr. Jennings informs us that he had long been convinced that gas was to be found, and that some two years since operations were commenced, but were abandoned on account of the flow of water. Soon after, the second attempt was made, upon higher ground, which proved successful. The first fifty feet were through light sand and gravelly soil, and at this depth the soapstone rock was reached. An eight inch pipe was then sunk, and boring through the rock commenced. At a further depth of six hundred and fifty feet, the vein was reached and the gas has continued to flow to the present time. No receiver or gasometer is used, but the gas is carried through a three inch pipe immediately to the house, some two hundred feet distant.

To give you some slight idea of the supply furnished, I will mention one fact. During the past winter, it was found necessary to keep large fires in the new house. There were thirteen of these, each consuming about the amount required for 150 of our common burners, and were continually burning night and day, without any apparent diminution.

A recent scientific test has shown that the pressure of the gas is 40 pounds to the square inch, and it is further estimated that there is a sufficient quantity to light the whole city of Cleveland.

There is one remarkable feature in connection with this, well deserving more than passing mention. While all the wells discovered have been more or less troubled with a flow of water, thus requiring pumping, Mr. Jennings states that, from the commencement to the close of the work, there has never been a drop of water in the well, and the engine used in drilling, and also designed for the purpose of pumping if required, has never been in operation since the well was completed.

I can assure your readers, if any of them find it convenient to visit the well, of a most hearty reception from Messrs. Jennings and Casement. They will find ample compensation for the trouble of a journey thither. M.

Sheet Lightning.

To the Editor of the Scientific American:

After carefully watching, for many years, what is called sheet lightning, I have never been able to make any distinction between it and so-called zigzag lightning. Sheet lightning is simply lightning at such great distance from us that we neither see its zigzag movements nor hear its thunders rolling. After sunset, should a thunder gust be on its march toward us, the first indications of it we see are its sheet lightning flashes and flickerings among the distant clouds. Bye and bye the blackening smoky looking clouds begin to loom up and travel toward us; then, shortly after, we hear the rolling sounds of distant but approaching thunder; and finally we hear the sharp alarming peals, and often see the zigzag movements of the fiery bolts, or electric charges, of the warring elements, flying from cloud to cloud.

Gloucester, N. J. JOHN HEPBURN.

[For the Scientific American.]

PORTABLE MEDICAL BATTERIES.

BY PROFESSOR GEORGE W. RAINS, OF THE MEDICAL COLLEGE OF GEORGIA.

The want of a small sized galvanic battery which can be easily carried about in the hand, and which at the same time is of sufficient power to fulfil all the requirements of the general practitioner, has long been felt; and it is continually growing more urgent, as the medical application of electricity becomes more extended. The apparatus now employed, whether it be that of Grove, Bunsen, Daniell, Smee, Siemens, Stöhrer or others, or their modifications as constructed in this country by Kidder, Drescher, Chester or the Galvano-Faradic Manufacturing Company of New York, has always the same inherent difficulty, when of sufficient power, of being too weighty and bulky to answer the requirements of easy portability, however excellent each may be for office use or laboratory purposes.

The Faradic instruments, for giving induced shocks by helices, have arrived at a high degree of excellence within the past few years, and may be considered as sufficiently answering all the requirements of portability and service, whether of the specialist or the general practitioner.

The principal difficulty heretofore existing in the construction of a small and sufficiently powerful galvanic battery has been in the well known law that quantity is proportional to the extent of active surface of each element, while intensity, energy, or power of penetrating and overcoming resistances is proportional to the number of elements employed. Thus it would appear that a battery of sufficient intensity to effectively pass its current through the human body must have many elements; and these must be of considerable size to give out the necessary quantity for all purposes of medical treatment.

So we have Siemens' modification of Daniell's battery for office and hospital use, composed of 60 glass jars from 5 to 6 inches in diameter by 7 or 8 inches high, containing the zinc and copper elements. Hence, from the apparent nature of the case, it has been assumed impracticable to construct a small battery, for portable use, having at the same time sufficient quantity and intensity.

This has been greatly to the detriment of the employment of the galvanic current, continuous or interrupted; for the larger number of cases for electric treatment require necessarily to be acted upon at the residences of the patients, and not at the office of the physician, where the necessary batteries are available. The high value of the galvanic current and its superiority to the Faradic in many cases are now well established, to say nothing of those instances where it is indispensable.

Such being the condition of things, the question arises as to the possibility of overcoming the apparent difficulties in the construction of a small, simple, readily portable battery for general medical use. Towards the solution of this problem I have devoted much time during the past year, and I will here state the principles which appear to evolve from my experiments.

First—That the electricity given out by any single element is composed of a number of rays or currents of different intensities.

Second—That a single element, even if of large size and in energetic action, has but a very small number of such rays or currents of the comparatively higher intensity.

Third—That only the rays or currents having the higher intensities pass through resistances.

Fourth—That an equal number of rays, or an equal amount