Correspondence.

India's Unsanitary Milk Supply.

To the Editor of the SCIENTIFIC AMERICAN:

I think some of your readers will be interested to learn that there is not one refrigerator car in all India, and that we have to take our milk supplies from local cattle stables that are anything but wholesome. Six years of plague have not made very much impression on the survivors as far as active sanitary precautions go, and we may have to look to American enterprise for our first refrigerator cars.

Our current issue of the Indian Municipal Journal sent herewith describes the situation of the milk supply of Bombay and in the other large towns of India.

JOHN WALLACE, C. E.,
Editor of the Indian Textile Journal.

Bombay, India, April 25, 1903.

On Stropping Razors.

To the Editor of the SCIENTIFIC AMERICAN:

Most people that shave themselves have trouble in keeping their razors sharp. For the benefit of such I will give the simple way I have of keeping my razors in shape.

Everyone knows that metal expands with heat. I put my razor, handle kept out, just before stropping, in boiling water, and leave it until it has absorbed as much heat as I can stand in handling. While the blade is hot I strop it well. The metal cools as I strop. In about twenty-five strokes the edge is sharpened and is keener when cold, for the metal contracts while sharpening. The canvas side of my strop is smeared with putz pomade, which I use if the razor is too dull; since it simply brightens the edge and wears it down just enough. LEON RIGGS.

St. Joseph, Mo., May 14, 1903.

A Word Against the Metric System.

To the Editor of the SCIENTIFIC AMERICAN:

The editorial, "The Metric System," in your issue for May 16, mentions two of the reasons why the system is opposed, but fails to mention the reason which leads all others in importance, namely:

The substitution of the millimeter for the inch involves the abandonment of all mechanical standards based on the inch.

This proposition was discussed at length in my paper on this subject, which was read at the last meeting of the American Society of Mechanical Engineers. In the discussion, which occupied an entire afternoon and evening, no rebuttal worthy of the name was offered. Such rebuttal is in fact scarcely possible, since the proof is not based on deduction merely, but is a simple matter of experience. To the extent to which American and English manufacturers have used the metric system, to the same extent have they abandoned sizes and standards based on the inch. Germany uses English pitch threads almost exclusively, and she measures them just as we do—in inches. In other words, in order to retain English threads, Germany is obliged to retain the English inch, as we must retain it if we are to save our standards.

Your comparison of American and English money is part of the metric stock in trade. As my paper has it:

"The superiority of the decimal system as applied to currency is largely due to the great amount of adding to be done. With day book, journal, ledger, cash book, trial balance, balance sheet, invoice inward and invoice outward alike, it is add, add, add, and then add some more. One bookkeeper in a good-sized factory office will do more adding than the whole shop and drawing office force combined. When it comes to multiplication or division, vulgar fractions are often the simpler."

If your readers doubt this, let them multiply or divide some number by 1-3 and then by its decimal equivalent .3333+, or even by ¼ and then by its equivalent .25.

The metric advocates should get over the idea, which is unworthy of intelligent men, that the opposition to their system is based on simple purblind conservatism. It is based on the desire to save our system of mechanical standards, which is worth a thousand-fold the value which the metric advocates claim for their system and a million-fold its actual value. This system of standards is the result of half a century of laborious effort, and on it, more than any other one thing, American manufacturing supremacy depends.

F. A. HALSEY,
Associate Editor American Machinist.

New York, May 20, 1903.

Radium Phenomena Considered as "Ether" Effects.

To the Editor of the SCIENTIFIC AMERICAN:

Self-luminosity, power to discharge electrified bodies at a distance, unclassed or abnormal radiation phenomena, generally analogous to X-ray effects, are remarkable attributes of radium compounds, differentiating the element to which they are due from the great body of the other elementary substances.

Now, according to a cablegram published in Melbourne on the 26th of March, the London Times is responsible for the statement that the discoverers (M. and Madame Curie) of the element have demonstrated that without combination, chemical or molecular change, it maintains a temperature 2.7 deg. F. above its surroundings.

If a system of elimination shows—apparently it has shown—that there is no slow process in action, giving rise to the effects by the expenditure of an initial store of potential energy as radiant force, tending ultimately to cessation by exhaustion; and if energy in recognizable form does not pass from adjacent bodies to a "self-luminous" and "self-calorescent" specimen of a radium compound, yet in this particular case the possibility remains that some obscure, or perhaps extra-terrestrial cause, may suffice to produce the effects noted, and in a manner strictly compatible with the established theories of heat and the conservation of energy.

Considering "self-calorescence"—the other radiations may be dealt with on similar lines—heat is one form in which the expenditure of mechanical force becomes manifest to the senses. The connection between the heat developed and the energy expended, is a perfectly definite and well known quantity; hence when a certain amount of heat is constantly given off, it points to the fact that an equivalent amount of energy is constantly being transformed. If a body offer a resistance to movement through any medium, then that resistance is made evident by a rise in temperature exactly equivalent to the kinetic energy, or energy of motion required to overcome the opposition.

The writer would suggest that this offers a clue to the radium phenomena, and would advance—always presuming the verification of the reported thermal effects—as a simple explanation, the following hypothesis:

If in its primordial composition—not necessarily atomic, questions of sub-atomicity may be involved—a mass of radium be dissimilar to a similar mass of another element (not possessing radium characteristics) in relation to a different resistance to motion relative to the "ether," then the observed or reported effects would simply indicate a process of transference and redistribution of energy. The earth's potential energy of motion would here be the source drawn upon to overcome the resistance offered by the "ether" to a mass of radium, the accompanying equivalent effects would naturally appear to be attributable to the radium as an origin.

Given planetary velocities, as in the case of the earth's motion, then, on account of the magnitude of the velocity factor in the velocity-resistance equivalent to the slight heat produced, the resistance factor might be exceedingly small; so small that in ordinary tests it would be altogether masked by other effects, yet not necessarily so small as to escape detection if made the particular object of research by the use of the exceedingly sensitive instruments* now available.

Astronomical data defining the earth's constants are fully tabulated, therefore it may be found that, given sufficiently delicate instrumental means, or efficient thermal insulation, insuring a constant temperature when the force causing radium activity is constant, the periodic variations of the componental planetary motions may be reproduced as corresponding thermal or deflection variations.

The drift of the solar system in reference to the inter-stellar medium is, from the astrophysical standpoint, a subject well worthy of investigation, and radium may supply an analytical method. The drift might, however, introduce an element of complexity, possibly negligible, but conversely it might prove dominant and of such great magnitude that the resistance factor would inversely become infinitesimal and unmeasurable.

The experimental pursuit of these problems would eventually be a series of researches upon disturbed "ether" "streams," and if the results were not altogether negative, would tend to cast some light upon the long sought physical relations of that medium in its fundamental connection with light, heat, electricity and other radiant forces.

That similar resistance effects to those under discussion have not been connected with the other elements is not remarkable; they must necessarily, if existent, be minute, and have not been specially sought. Analogously the "new" elements themselves have only recently been separated, although any one of a myriad of the preceding close analyses might have revealed them.

If speculation be extended into the field of elemental evolution, it might be surmised that the better known elements have been subjected to, or are the outcome of, a common formative process, and have attained a general equilibrium of action in regard to the surrounding ether. The consequent conditions would then form the environment to which, through countless generations, the human senses had become attuned, hence their constitution of a neutral or normal state, not recognized as existent, except by comparison with some unusual, or perhaps, extra-terrestrial standard.

If it be established that radium offers a particular resistance to the "ether," then whether its lines prove present in the solar or stellar spectra, or not, it might, inferentially, be deemed to have had an origin in some region, possibly beyond the star depths, where the physical environment is not that known to man.

The writer fully recognizes the speculative nature of the hypothesis put forward; so far as he is aware, it breaks new ground. The pages of the SCIENTIFIC AMERICAN may bring the matter within the cognizance of those who possess the appliances necessary to put the question to a crucial test. If the hypothesis be verified, important results might be looked for; if disproved, new facts could hardly fail to be brought to light in the process, and thus time devoted to the experiments would still bear fruit.

JAS. ALEX. SMITH.

Melbourne, Australia, April 8, 1903.

* I. e. the quartz film suspension system of Prof. Vernon Boys. Proc. Royal Institution of Great Britain, 1889, Vol. XII, part III, and the Phil. Mag. 1895, Vol. 186.

The Current Supplement.

With an article by Day Allen Willey on the Cod Fisheries of Newfoundland, the current SUPPLEMENT No. 1430, is opened. Excellent illustrations elucidate the text. "Mechanical Traction on Tramways" is the title of an article which deals with a new system of propulsion employed in Paris. Mr. Cyril Davenport gives a brief history of personal jewelry. Selenium is a substance which, by reason of its remarkable electrical property of varying in conductivity with the amount of light by which it happens to be illuminated, has been made the subject of experiments since the days of Berzelius. In a most instructive article accompanied by many clear illustrations, William J. Hammer describes the results which have so far been obtained with this remarkable substance. His paper may well be considered the most exhaustive which has so far appeared on the subject. Dr. McPherson tells something of Lord Kelvin's new idea about ether atoms. Two novel types of traveling electric hoists are described and illustrated. Emile Guarini presents a lucid account of the Perret electric clock. Sir Oliver Lodge's paper on electrons is continued. The usual trade suggestions from United States Consuls and Selected Formulæ will be found in their usual places.

A Memorial to Bessemer.

A movement is on foot in England to establish by popular subscription a memorial to Sir Henry Bessemer. That some recognition is due to the man who reduced the cost of steel from $250 to $20 a ton in less than half a century, goes without saying. The scheme has not as yet been fully developed; but the memorial will doubtless take the form of an institution for instruction in the various branches of metallurgy, under the direction of the University of London. A public meeting is to be held on June 29, at which it is to be determined what plan will be adopted.

The First Municipal Exhibition.

On May 20 the King of Saxony opened the German Municipal Exhibition, the first of its kind ever held. Exhibits of 128 cities were on view. Over 300 manufacturers displayed articles employed in municipal work, street improvement, sewage systems and the like. From the seaport towns models of docks and harbor works were sent. Among the noteworthy exhibits may be mentioned plans of city halls, street car tracks and elevated railway systems, public parks, sewage and drainage systems, municipal slaughter houses and garbage crematories.

Human Rays.

It is announced by Prof. Arthur W. Goodspeed, of the University of Pennsylvania, that he has been experimenting with rays emanating from the human body. Although photographs were made by the aid of Crookes tubes, it is asserted that the tubes were not the actual means of producing the photograph, but that they acted simply as intensifiers of the rays. Prof. Goodspeed is said to have ascertained that the rays from the human body pass with difficulty through glass and with ease through aluminium.

"Buddeized" Milk.

A Swedish pamphlet describes a process of "Buddeizing" milk, which process tends to sterilize and conserve the milk so that it can be kept fresh for any length of time. The inventor is a certain Mr. Budde; hence the name. The pamphlet says that he has proven that the enzymes in the milk, together with heat, not exceeding 55 deg. Cent. nor less than 48 deg. Cent., have the power of decomposing hydric dioxide into water and oxygen, and that at the generation of oxygen, microbes and spores are entirely destroyed.