Scientific American.

NEW YORK, DECEMBER 11, 1858.

"The Wonder of the Age."—A New Light!

A pamphlet has been put into our possession bearing the above high-sounding title, in which we find some very extravagant expressions regarding the "Neubianoils" for which a patent was issued to Levi L. Hill, of Greenport, N. Y., on the 15th of June last. It is stated that "it is a most interesting and important discovery," by which "the air we breathe is made to light and heat our dwellings, cook our food, and carry our burdens." The latter two allusions refer to its employment as fuel for domestic purposes, and for generating steam. Such proposed applications of these oils tend to throw ridicule upon them, as from the description which we shall present of their manufacture it will become transparent to all that they must be very expensive as a fuel in comparison with coal. The processes described in the specification for obtaining the oils referred to are, in substance, as follows:—

Some coal tar and crude turpentine, in equal parts, are first heated together, and treated with five per cent of sulphuric acid, then washed with hot water to remove the free acid, after which they are placed in a still, submitted to a temperature of from 150° to 112°, and some hydrogen gas and air forced into the still through tubes. The vapor which passes over in this distillation is condensed in the usual manner, and forms a fluid denominated "No. 1." Another fluid, designated as "No. 2," is made by placing one ounce of zinc, two of sulphuric acid, and four of water, in a deep jar, then pouring upon these, three and one-half pints of crude rosin oil, one quart of coal naphtha, half an ounce of Canada balsam, one-eighth of an ounce of camphor, and one quart of benzole. These substances are closely confined in the jar for several hours, then decanted off, and treated with chalk, to neutralize the free acid, after which the fluid becomes clear by repose. Another liquid—"No. 3"—is obtained by distilling india rubber in a retort at 600°, condensing the vapor and obtaining crude caoutchoucine, which is twice distilled afterwards at lower temperatures, and a very volatile hydro-carbon fluid obtained. These three fluids, Nos. 1, 2, and 3, are afterwards mixed together in different proportions, and form the "Neubian oils A, B, C, and D," claimed in Mr. Hill's patent; the caoutchoucine being only claimed as combined with these, because it is a well-known chemical.

The proportions of mixture are as follows: One quart of No. 1, two of No. 2, and one ounce of No. 3, are mixed together, then agitated and allowed to rest for three days, when the clear is decanted, and becomes "Neubian oil A." To such a quantity thus made, from one pint to one gallon of naphtha or benzole is added, and forms "Neubian oil B." By adding from ten to fifty per cent of caoutchoucine (No. 3) to oil A, "Neubian oil C" is obtained; and by combining A with ten per cent of rosin oil, twenty per cent of naphtha, and ten per cent of turpentine, "Neubian oil D" is the result.

This new light has been exhibited from Boston to Buffalo, has been in use for some months in the office of the Hudson (N. Y.) *Daily Star*, and we have recently examined it in this city, at the Odd-Fellows' Hall. The fluid (or Neubian oils) is placed in a vessel, through which air is blown by a self-acting pair of bellows, thus vaporizing and mixing with the fluid, and carrying it off through tubes to the burners. The light thus produced, when we saw it burning, was very good, but no better, we think, than the benzole light made in Mace's apparatus, illustrated on page 153, Vol. X, Scientific American.

No patent has been ssued for the apparatus, or the means of vaporizing hydro-carbon fluids by forcing air through them, as such "air-gas lights" are quite old. The claims of Mr. Hill are two in number, one embracing the use of caoutchoucine combined with the Neubian oils, and the other claiming the oils A, B, C, and D. The oils are somewhat of a harlequin compound, similar in their nature to a mixture of naphtha and absolute alcohol; and from the processes and ingredients required in making them, any person may be able to form a very good idea of their comparative economy as a gas light.

In the pamphlet referred to, it is stated that the air we breathe is burned, and persons unacquainted with chemistry have been rather puzzled by such an expression, and have considered this a new discovery. The air in this light performs the very same office as in burning common gas or any oil; it supports combustion. In the one case, it is first mixed with the hydro-carbon gas as in Hill's apparatus; in burning common gas, it is supplied at the burners. Hill's burners, therefore, require to possess, and have, much larger orifices than the common burners.

The objections to air-gas lights are, first, the liability of the fluid vapors to congeal in cold weather; hence the apparatus and tubes must be kept at a temperature of from 60° to 70°. The benzole light operated very well in some situations during warm weather, but failed during winter. The second objection to them is, that as all atmospheric air contains a certain amount of moisture, that which is blown through the liquid and mixes with the vapor is liable to be condensed in the pipes in cold weather, especially at the elbows or bends, forming hoar-frost, and ultimately choking up the passages. This evil might be remedied by making the air pass over absolute alcohol before it is mixed with the Neubian oil vapor, as the alcohol has a very great affinity for water, and would absorb the moisture.

In our next issue we shall describe the oils made from tar by C. Mansfield, and which were employed several years ago for producing an "air-gas light" similar to the one we have just described.

Do Something for Truth.

How beautiful is truth! No time can be inappropriate for learning it; no season unfitting for its reception. The day chants forth its bold, free songs, and the night is luminous with its broad light. It started as a spring at the creation, and has been widening as a river with the centuries that have elapsed. All mankind enjoy it; and the more truth, whether natural or revealed, there is in a nation, the more truly happy are that people.

True happiness consists, not in immediate personal pleasure, but in the possession of knowledge; which simply means the accumulation of facts—the amassing of truth.

Peculiarly beautiful and essentially sublime are the truths of science, for they admit of individual verification on the one hand, and bring us into a closer acquaintance with the Deity, by demonstrating to us the grandeur of his works, on the other.

Few can study unmoved the wonders of insect existence; and observe, with microscopic aid, the seeming infinity of life, and note how perfect and complete are creatures whose size is measured by *thousandths of inches*, each in its sphere fulfilling all the necessities of its being, with equal, if not often superior, completeness to man; and to whom a drop of water is a world, a teacupful a universe. Nor can any one peer into the vast and seeming illimitability of space, and view the twinkling stars, whose distance we compute by *billions of miles*, or the planets obeying, in their orbits, the same law which governs a pebble's fall, without feeling awe and devotion for the Creative Intelligence, and wishing to investigate these wondrous objects in the pleasant fields of nature.

But, happily for us, all the truths of science do not require such grand or minute subjects for our contemplation, in order that we may learn them, for around every household fire, in every family circle, at every meal, and during all our daily avocations, plenty of mysteries occur which require as careful examination and patient thought for their complete elucidation, before they are placed among the facts that are proved, as did the steam engine or the atomic theory.

The age has gone by when the ordinary circumstances by which we are surrounded require to be catalogued, but the age has come, in which causes must be assigned for every effect; and to discover "the reason why" of some phenomena should now be the aim of every intelligent individual.

The men who lead the van of knowledge have plenty of work on hand; and it is for the people in their winter's leisure to learn and spread what may be truly called "home truths." In chemistry, in physiology, in geology, and household economy, in fact, in all the sciences, there is much to be done; and we should like to see the people prove the value of the knowledge they have already received, by paying an interest, by adding information—truth—of every kind into the common fund. By so doing, each person would not only be contributing to their own and others' happiness, but would also be, in the truest sense, furthering the glory of the Divine Being.

Animal Heat—Carbon and Oxygen.

In an able lecture, delivered by the Rev. Dr. Storrs, of Brooklyn, in the Cooper Institute, on the 25th ult., on "The Influence of Climate on Civilization," he seemed to attribute much of the vigor of the northern races to the food required by their climate. The idea conveyed seemed to be an endorsement of the popular theory of animal heat, which is inculcated in all the common books on physiology. These compare the lungs to a furnace, in which air and carbon are brought into chemical union in producing heat. This theory is simple, and somewhat beautiful, but not correct. The combustion of our food-fuel does not take place in the lungs, in the same manner that the fire is produced in the furnace; the food of man is not fed into his lungs, neither does the oxygen of the air combine with the food or carbon in the lungs, but passes into the blood through their membrane tissue; carbonic acid and moisture being given out in exchange. All our food undergoes a chemical change, before it reaches the lungs in the form of blood, and the warmth of the body comes from the organic processes which make and unmake the animal tissues. These facts, which should be familiar to all, lay the axe at the root of the common furnace theory of animal heat.

Man requires the same elements for his food in all climates. The northern races eat much fat, which is almost pure hydro-carbon; the inhabitants of tropical climates eat gums and sugars, which are just as rich in carbon. Some castes of Hindoos in India live exclusively on vegetables; the Caffres of hot South Africa are the greatest beef gormandizers in the world.

The temperature of man is 98° in all seasons, in the hottest and coldest climates. A change of this uniform temperature of the human body is the sign of disease. Man preserves his standard temperature in the tropical and arctic regions in virtue of this peculiar organism which adjusts itself to varying circumstances, but the means by which it does this is still involved in much obscurity.

Testimonial to a Photographer.

A short time ago the artists who color, in oils, water or pastel, the photographs of Mr. J. Gurney, of this city, presented him with a handsome gold-headed cane. The occasion was the opening of a new gallery, at 707 Broadway. The specimens on exhibition on the occasion were very fine, and not only proved the excellence of the photographs, but also the genius of the artists.

The Winans Steamer—Our Answer to the Builders' Communication.

Last week we promised to answer the interesting communication of Messrs. Winans, and we now proceed to fulfil our pledge.

There is little doubt that the engines and mechanical portion of the work will be well constructed, and arranged in the best manner; but still, no matter how perfect it may be, it is still *liable* to accident, and the dependence of placing sails on the smoke-pipes to keep the vessel's steerage, is surely too small a one for the safety of human life. She may be days or weeks unobserved on the ocean, and unable to proceed to any port for repairs, and the very propelling wheel itself, with its guard, offering a projection against which the waves can exert their force and give the vessel an increased oscillation, will augment in some measure the danger of the position. Our reason, and we believe it a good one, for advocating that every steamship should be equipped as a sailing vessel as well, is, that she may be, as far as human ingenuity can place her, beyond the disastrous results which follow an accident to her vital part, if she be not provided with an immediate and nearly equal substitute. Too many ships provided with steam and sails have already been lost; let us, therefore, rather add to, than take from, the appliances of safety and means of locomotion. This is the vindication of our first objection.

In objection 2, when we used the word "unstable" in reference to its shape, we meant that, notwithstanding the actual strength of the parts, the form was not conducive to steadiness in the water. For example, many buoys have been constructed of a circular cross section, and secured to the bottom of the sea; as forms for opposing the force of the waves, they are stable; but so *unsteady* are they, that their rolling motion is made to ring bells, and thus warn the mariner of danger. The shape is a good one for *floating* merely, but necessarily a bad one for maintaining a perpendicular position in a mobile fluid.

It is no matter how far down the ballast, machinery, anchors, &c., are placed, they only act as the bob or weight of a pendulum, and so long as they can move as freely to the one side of a perpendicular line as they have been caused to depart from it on the other, their action is very little towards hindering the rocking of the vessel. The steadiness of a vessel in our opinion should depend as much or more on the lines and section than upon ballast or cargo. To depend on the rudders as a means of securing steadiness is unwise, because they are always liable to be carried away, but still it shows the advantage of what should not have been neglected—to wit, a keel. Again, the cigar-boat gradually tapers towards it extremities, thus increasing its tendency to be *on* the waves, and not *in* the water, which is manifestly no position to secure a ship's steadiness in rough weather.

The belief which Messrs. Winans put forth in answer to the third objection, of course, experiment only can demonstrate; but we would wish to impress upon the reader that there are two considerations which should be taken into account by a ship-builder when choosing a model for a swift vessel. First—"What is the best model to most easily overcome the resistance to be met?" This is very important. Second—"What is the best model to most *safely* overcome the resistance to be met?" This is more important still. Messrs. Winans will agree with us in this, especially in a vessel designed only to carry passengers and the mails, and the most eminent nautical engineers have decided in favor of the "wave-line," but are, like ourselves, ready to be taught better.

Objection 4 is answered ably, but without recollecting that a long, narrow ship, beyond certain limits, does not admit of sufficient strength in its construction to resist the action of the waves in rough weather; and hence, although Messrs. Winans are correct as regards the harmony of the forces of the waves,