WILLAMETTE FARMER

S. F. MARKET REPORT.

Chemistry in its Relation to Modern Thought.

The above was the title of a paper read by Mr. H. B. Baildon before a meeting of the North British branch of the Pharmaceutical North British branch of the Pharmaceutical Society, held in Edinburgh recently. In the course of his remarks the reader showed that to chemistry was entrusted the task of tracking matter back to its simplest form or forms, and the result, so far as present knowledge went, was remarkable. There were over 60 elements which had hitherto defied all attempts to re-solve them into a further simplicity, and these were indestructible, passing scathless and in-vulnerable through every transformation. While of course it was open to the theorists to hold that these elements were varieties of some ultimate single substance, there seemed no prospect that a proof would ever offer itself. No doubt the fact that all the elements had dif-ferent atomatic weights, and that in some cases ferent atomatic weights, and that in some cases we found elements which bore a family likeness we found elements which bore a family likeness, forming a series in regard to their atomic weights—affording, as it were, a glimpse of the wondrous staircase of creation; yet as there ap-peared to be no means of further analysis, this theory seemed fated to remain a theory. Like all sciences, chemistry was full of unanswered questions. Mature and elaborate as it was, it had not sorrendered the keys of its causation. We might talk glibly enough of chemical affin-ities though we could give no reason for them. It was possible that at some future time a further step might be made; some relation be-tween the form of the molecules and these af-finities might be discovered. But it seemed certain, from all previous experience, that, vircertain, from all previous experience, that, vir-tually, the same question would remain unan-swered-a law being found according to which the molecules attract each other, but for whose existence no reason could be assigned. Pass ing on to inquire what bearing chemistry had upon Mr. Tyndall's notion of matter, the pro-fessor found in matter, firstly, the "promise of all terrestrial life." Did that mean there was nothing but matter in existence? If so, it was nothing but matter in existence? If so, it was contradictory to the professor's own admission of the mystery of mind. Did it mean that the material or physical universe consisted of mat-ter? That was tautologic. Or did it mean that matter traced back to its simplest forms gave promise of its future destiny? If so, this last could fistly be denied. Matter in its sim-plest forms consisted of a number of accession. last could flatly be denied. Matter in its sim-plest forms consisted of a number of separate elements. So long as these were kept apart, they exhibited peculiar and distinct properties. But take two whose single properties were known, and allow them to combine, when there appeared what was virtually a new creation— a substance possessing q alities different from those of its constituents. Neither of these, therefore, could be said to afford the promise of the resulting product. After a reference to the law of combination by weight, the reader treated of a combination by volume, diffusion of gases and crystallization. He concluded by saying that to his mind the fact of crystalliza-tion was higher than that of any law they had yet dealt with; it declared most distinctly the connection between beauty and purity, the tenconnection between beauty and purity, the ten-dency of the crystal being to cast out all chem ical impurity.—Iron.

Combined Steel and Iron.

In addition to the advantages alluded to last week as derivable from Wheeler's new mode of welding steel to iron, we may mention, as of great importance, its application to the manufacture of fire arms—both small arms and component of the largest editors. cannon of the largest caliber. Mr. Wheeler holds that the past manner of casting cannon, in not excluding the atmosphere from the mold while moltan metal is being poured in, accounts for the brittleness of the gun metal in general, and its lack of resisting force to a great exansive power.

accounts for the oritheness of the gun metal in general, and its lack of resisting force to a great expansive power. Hitherto the great problem has been to dis-cover a gun that would be light and economical and at the same time capable of great endur-ance. The best known cannon now in use is the Armstrong gun in England. This inventor, after spending hundreds of thousands of pounds for the government, brought out a gun that secured him a knighthood. The Armstrong gun is of iron entirely. The great trouble with an iron gun, however, lies in the fact that it is subject to abrasion from the friction of its load, so that in time it becomes very inaccurate from irregularities produced upon the surface of its interior. A steel surface is necessary to guard against this abrasion, but a gun made entirely of steel has no resisting strength, as compared with an iron gun. The famous Kupp gun of Germany is a steel gun, but it sometimes bursts after a second discharge, as was the case with the last experiment made with a gun of extra-ordinary callbar. after a second discharge, as was the case with the last experiment made with a gun of extra-ordinary caliber. For years the great problem has been to combine steel with iron so that a gun might be found that will have a steel living for its interior, to prevent abrasion, and iron exterior to secure the desired strength. Steel is also much more expensive and heavy than iron, so that an iron gun with steel lining would of necessity be lighter, more economical and effective than could any of the guns made of steel alone. It would also have a strength far steel alone. superior to the best Armstrong gun. To solve this problem has required the welding of steel and iron in such a manner that a homogeneous mass would be produced, combining the desid-eratum of good qualities. Hence Mr. Wheeler's combined iron and steel plan has been called the Armstrong married to the Krupp. It is the successful solution of a problem upon which the warlike nations of the world have expended millions without, heretofore, any very satisfactory result In regard to small arms it is said that Remington, Sharp, and Mrs. Colt have made overtures to use the process in the manufacture of their weapons. It is claimed that the invention, of the identical process used in the mention, ture of the celebrated Damascus blade. Certain it is that all the leading naval officers, from Admiral Porter down, are very enthusiastic upon the subject of this improvement.

Vegetable Fiber for Plastering.

Notwithstanding it is well known that the Notwithstanding it is well known that the animal hair used in mortar for plastering c-lings is soon destroyed by the caustic action of the quicklime, its use for keeping plaster to-gether has been persisted in from time im memorial. This is so much more surprising, as it is well known by all who handle actds and alkalies, that the latter act in an opposite way from the former on vegetable and animal fibers; while mineral acids, lise oil of vitriol, etc., do not attack animal substances like hair. the while mineral acids, like oil of vitriol, etc., do not attack animal substances like hair, the mineral alkalies, as potash, soda, lime, etc., do so; but on the other hand, they do not at-tack vegetable fibers, which are as safe against caustic alkalies as animal fibers are against acid. Therefore quickline acts on hair in a similar way, and more so in proportion as it is more caustic; of course the hair used soon be-comes rotten, and very often does not prevent the plaster from falling off, as is well known by the plaster from falling off, as is well known by hose in the business. At last the idea was conceived of substitut-

ing a vegetable fiber for the hair, which was so successful that the invention was patented, and after experimenting with various kinds of vege-table fibers, it is now pr-pared and furnished to builders, masons, plasterers, architects, and con-tractore tractors.

tractors. Every one knows that the animal hair, as sold to the trade, is very impure, coataining some 30 per cent. of its weight of impurities, as lime and scrapings of hides, while the hair itself, by the caustic action of the quicklime used in the process of removing it from the hides, has been greatly damaged and lost some 50 per cent. of its original strength. The ob-jections to the hair thus far used are: 1st. It is more than half rotten by quicklime when bought. 2d. It can not resist the action of the lime in the plaster, but soon rots entirely away. 3d. It contains at least 30 per cent. of dirt 3d. It contains at least 30 per cent. of dirt and dust. 4th. Besides this loss in quantity, there is much short hair which is of no use in the plaster. This new material is sold in New York city,

This new material is fold in New York city, under the name of the patent vegetable plas-tering fiber. The advantages claimed for it are: 1st. Being of a woody nature, in-stead of being destroyed when put in the lime, it is preserved—lime being a preserver of wood. 2d. It is light and bulky, so that one pound, costing only 20 cents, is sufficient for a barrel of browning, and two pounds for a barrel of lime. costing only 20 cents, is sufficient for a barr 1 of browning, and two pounds for a barre1 of lime scratch coat. 3d. It is much stronger than bair, is very light, clean, and perfectly free from dirt. 4th. It mixes more easily and freely with the plaster than is the case with bair, and also spreads much more evenly through the same. This substance is packed in balos of two events such from for the in bales of two pounds each, ready for use, and has only to be whipped a little to lighten it up, and scattered over the lime, which should be first thoroughly slacked.

Formation of Ultramarine During the Incineration of Bread.

I do not find any note of the fact that, at a certain stage in the incineration (burning) of bread, the beautiful ultramarine blue is formed. This occurs under circumstances which I have not yet sufficiently studied to enable me to repro-duce it with certainty; but if the heat be raised to very bright redness, or be prolonged after complete incineration of the bread, the blue complete incineration of the bread, the blue passes into a beautiful furquoise color, then be-comes green, then passes on into a rusty color, and finally comes out as a pale fawn-colored lining to the botryoidal mass of ash. This is not further affected, even by a prolonged white heat. The tints are so suggestive of the pres-ence of copper that only by very careful ex-smination did I satisfy myself of the absence of that metal; and I find that the colors occur in the purest and finest bread, as well as in in-ferior samples. I should be grateful if other analysts would favor me with any observations which they may have made upon this point, and I hope soon to be in a position to submit for my-self some further account. It is curious that copper should appear in all

by the latter. The opening of the mirror which is in the form of a truncated cone, is

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DOMESTIC PRODUCE.

[WHOLESALE.]

In the further affected, even by a prolonged white heat. The tints are so suggestive of the pressent and in the top very careful even in the purest and finest bread, as well as in init point, and incet bread, as well as in init point, and incet bread, as well as in init point, and incet bread, as well as in init point, and incet bread, as well as init point, and is in the form of a truncated cone, is spring Laure 1. The second content of the agents ordinarily used for adulterating bread, and the question arises whether the supposed use of copper may not sometimes have been erroneously inferred for the occurrence in bread ash of these beautiful colors. James Edmunds, in Chemical News.
A Mr. Mouchot has just invented a machine composed of three principal parts, to-wit: a metalic mirror with a linear focus, a blackened boiler whose axis coincides with this focus, and a casing of glass permitting the solar rays to come to be in the oposing their egress until they have been transformed into obscure rays by the latter. The opening of the mirror, with a linear focus, a blackened boiler whose axis coincides with this focus, and a fast in the form of a truncated cone, is WEDWESDAY M., February 23, 1876.

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of it: "I consider it the bes preparation for its in. tended purposes."

BUCKINGHAM'S DYE

6

Tus scientific report of the Austro-Hungarian Arotio expedition represents the effect of extreme cold upon the human body in high northern latitudes as usually much exaggerated. Among the sailors there were some who did not wear fur coats at all, and even in the coldest weather the sailors there were some who did not wear fur coats at all, and even in the coldest weather they smoked their cigars outdoors. It is only when accompanied by wind that the cold pro-duces serious discontort; but the violen winds common in southern climates are unknown near Francis Joseph's Land, the northernmost country yet discovered on the earth. The be-life that the polar ice tends strongly to calm the winds is commonly entertained by Arctic sailors. Among the more remarkable discov-eries made by Lieutenant Weyprecht is a curi-ous fact about the drift of Arctic ice; it does not drift straight before the wind, but invaria-bly deviates to the right, looked at from the conter of the compass. The deviation cannot be accounted for, either by the conformation of the neighboring coats, or the existence of currents which might produce it, as it occurs with winds blowing from opposite directions.

Arran filing a saw, place it on a level board and pass a whetstone over the side of the testh until all the wire edge is off them. This will make the saw out true and smooth, and will re-main sharp longer. The saw must be set true with a saw set.—Scientific American.

turned toward to the sun. The sides of the cone make an angle of 45° with its axis. The bottom of the mirror is composed of a disc of cast iron, which has for its object the diminu-tion of the force of the wind.

The boiler, which is of the same hight as the mirror, rises from the center of the disc, and is of copper, blackened on the out-side. It is composed of a double casing, be-tween the inner and outer of which is the feed water.

The following is one the results obtained with The following is one the results obtained with this apparatus under ordinary circumstances, to wit: 20 liters $(1.220)_4$ inches) of water were introduced at 20° (68° Fahrenheit); in 40 min-utes they produced steam of two atmospheres, and a few minutes later of five atmospheres. The steam served for the working of several motors.—American Manufacturer. motors.—American Manufacturer.

THE CONSTRUCTION OF REVOLVING DRAW mainogs.—Mr. Clemens Herschell has presented to the American Society of Civil Engineers a paper on the principles of the constitution and calculation of the strains in revolving draw-bridges, and his work has an important value as one of practical interest to the profession of engineers. The calculation of continuous girders was first undertaken by Navier in 1830, but was much improved upon by Classeyron in girders was first undertaken by Navier in 1830, but was much improved upon by Classeyron in 1857. These and other authors have, how-ever, Mr. Herachell states, developed only special cases, and he has undertaken to develop the equations for the general case of unequal spans and supports, either in or out of level. Following the equations given in a recent work of Weyranob, Mr. Herschell gives in de-hail the formula necessary to commute the diwork of weyrauch, and referenced gives in de-tail the formula necessary to compute the di-mensions of every part of the bridge in ques-tion, and illustrates the whole by numerical ex-amples. The several equations are written out in full, and are so clear as to enable any one to the several equations are written out In full, and are so clear as to enable any one to follow the processes with ease. A couple of tables, showing the strains experienced by every portion of a bridge under certain loads, gives a very lucid view of the relative strength demanded in the various portions of the structure.—Iron Age.

ORDANIC ELEMENTS AS ELECTRO-MOTORS.-It appears, from the author's researches, that the interior of a muscle is negative, which indi-cates that there is oxidation in the interior and reduction at the exterior, and that all organized bodies appear formed of—so to say—an infi-nite number of electro-motors, which intervene probably in the phenomena of nutrition.---

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