

"8. Whether it is better to apply lime or marl, or clay on a particular soil?

"9. Whether special manures, such as superphosphate or ammoniacal salts, can be used (of course discreetly) without permanently injuring the land, or whether the farmer should rather depend upon the liberal application of farm-yard manure that he may restore to the land all the elements of fertility removed in the crops?

"10. What kinds of artificial manures are best suited to soils of various compositions?

"11. Whether deep plowing or steam cultivation is likely to be useful as a means of developing the natural stores of plant-food in the soil?

"12. Whether the food of plants in the soil exists in an available or inert condition?"

Oxidation of Vegetable Oils.

M. Cloez, in a memoir read before the Academy of Sciences of Paris, announces the following results of his experiments and observations:—

1. That all the fat oils absorb oxygen from the air, and increase in weight by quantities which differ, for different kinds of oil placed under the same circumstances, and for the same oil under different circumstances.

2. That the height of the temperature exercises a very marked influence on the rapidity of the oxidation.

3. That the intensity of the light also manifestly influences the phenomena.

4. That light transmitted by coloured glasses checks more or less the resinification of the oils by the air. Starting from colorless glass as the term of comparison, the decrease of oxidation is in the following order: Colorless, blue, violet, red, green, yellow.

5. That in darkness the oxidation is considerably retarded; starts later and progresses more slowly than in light.

6. That the presence of certain materials, and the contact with certain substances, accelerate or retard this effect.

7. That in the resinification of the oils there is both a loss of carbon and hydrogen of the oil, and an absorption of oxygen.

8. That the different oils, in oxidizing, furnish in general the same products: volatile acid compounds, liquid and solid fat acids not altered, and an insoluble solid material, which appears to be a definite proximate principle. Oils oxidized in the air no longer contain glycerin.

9. The drying and non-drying oils are not chemically distinguishable. All contain the same glyeric proximate principles, but in different proportions.

Substituto for Magnesium.

Science has discovered, through the skill of a French chemist, a good substitute for the new metal magnesium, which will produce a light nearly as brilliant, at a very much lower cost. The new light is produced by the combustion of a mixture of twenty-four parts of well-dried pulverized nitrate of potash with seven parts of flour of sulphur and six of the red sulphide of arsenic, and the mixture can be sold at about 3d. a pound. Professor Tyndall has been exhibiting at the Royal Institution (London) some more of the marvellous phenomena of the connection of light and sound.—*London Artizan*.

House Furnishing.

Our theory is that no one thing should catch the eye. There should be harmony throughout; and we would recommend that great attention be paid to the colour of the walls. If they, the ceiling and the carpet are well selected all other points of detail are like the finishing touches of a picture. The right tone having been attained, the rest is comparatively easy.

We have found grays, light greens, and pale mauve to work up well; and the less pattern there is in the paper the better, unless for some special reason, a chintz paper is desired. If the room faces the south, a cool gray or mauve is good; and for a north room we have seen a yellowish green answer admirably, imparting to the room an appearance of sunshine.

As a rule, we have found it best to avoid reds, especially a dark red, which is offensively dingy.

Blue is a dangerous colour to use. It is so apt to make a room either gaudy or cold; though we have seen it effectively used with pink to give a Pomadour look.

For carpets we incline to small inoffensive patterns and generally avoid those which are flowery, as being in theory and effect bad.

As to the arrangement of the furniture, it is difficult to say much, as everything depends upon what it consists of. But we have generally found it desirable to keep the centre of the room and the space before the fire quite free, and to eschew a round table. If we must have one we prefer pushing it into some corner of the room—anywhere but in the middle.—*London Society*.

Coal in Russia.

The fact will be heard with surprise by the large number who have hitherto considered that the expansion of the Russian empire was necessarily limited by the lack of coal, that the coal resources of Russia are shown to be considerably greater than even those of the United States. In the Oural district coal has been found in numerous places, both on the west and east sides of the mountain chain, its value being greatly enhanced by the fact that iron is found in its immediate neighborhood. There is an immense basin in the district, of which Moscow is the centre, covering an area of 120,000 square miles, nearly as large as the entire bituminous coal area of the United States. And there is the coal region of the Don, covering 18,000 square miles, and being, therefore, considerably larger than the anthracite region of Pennsylvania; as large as the whole of the bituminous coal area of British America, and more than half as large again as all the coal fields in the United Kingdom. Besides the three coal regions above described (whose aggregate area equals all the coal fields in the United States, British North America, and Great Britain combined), coal has been discovered in the Caucasus, Crimea, Simbirsk, Ekatarinofski, and the steppes of the Klieron, in the government of Kief, and in Poland. These facts alone may materially interfere with the calculations which have been hazarded as to the probable duration of our coal fields, and should at least allay some of the anxiety as to the future coal supply for the world.—*Mining Journal*.