The term vermiculus, used by the Moors, referred to the insect they called Kermes, and hence it seems the name Kermesino or Cremesino, which has in our time become crimson.

The following brilliant pigment from iodine has been improperly called vermilion, and if it should be used to dress or give unnatural vividness to true vermilion, may again bring it into disrepute. When red or orange lead has been substituted for or used in adulterating vermilion, muriatic acid applied to such pigments will turn them more or less white or gray; but pure vermillions will not be affected by the acid, nor will they by pure or caustic alkalies, which change the color of the red of iodine. By burning more or less, vermilion may be brought to the color of most of the red ochres.

IODINE SCARLET

Is a new pigment of a vivid and beautiful scarlet color, exceeding the brilliancy of vermilion. It has received several false appellations, but is truly an iodide or bi-iodide of mercury, varying in degrees of intense redness. It has the body and opacity of vermilion, but should be used with an ivory palette knife, as iron and most metals change it to colors varying from yellow to black. Strong light rather deepens and cools it, and impure air soon utterly destroys its scarlet color, and even metallizes it in substance. The charms of beauty and novelty have recommended it, particularly to amateurs; and dazzling brilliancy might render it valuable for high and fiery effects of color, if any mode of securing it from change should be devised; at any rate it should be used pure and alone. By time alone these colors vanish in a thin wash or glaze without apparent cause, and they attack almost every metallic substance, and some of them even in a dry state. When used in water, gum ammoniac seems to secure it from change; and it has been observed that, when gamboge is glazed over it, it preserves its hue with constancy.

RED LEAD.

Minium,* or saturine red, is an ancient pigment, by some old writers confounded with cinnabar, and called sinoper or synoper, is a deutoxide of lead, prepared by subjecting massicot to the heat of a furnace with an expanded surface and free accession of air. It is of a scarlet color and fine hue, warmer than common vermilion; bright, but not so vivid as the bi-iodide of mercury; though it has the body and opacity of both these pigments, and has been confounded, even in name, with vermilion, with which it was formerly customary to mix it. When pure and alone, light does not affect its color; but white lead or any oxide, or preparation of that metal mixed with it, soon deprives it of color, as acids do also; and impure air will blacken and ultimately metallize it.

On account of its extreme fugitiveness when mixed with white lead, it cannot be used in tints; but employed, unmixed with other pigments, in simple varnish or oil not rendered drying by any metallic oxide, it may, under favorable circumstances, stand a long time; hence red lead has had a variable character for durability. It is in itself, however, an excellent dryer in oil, and has in this view been employed with other pigments; but, as regards color, it cannot be mixed safely with any other pigments than the ochres, earths, and blacks in general. Used alone, it answers, however, as a good red paint for common purposes.

RED OCHRE

Is a name proper rather to a class than to an individual pigment, and comprehends Indian red, light red, Venetian red, scarlet ochre, Indian ochre, redding, ruddle, bole, etc., besides other absurd appellations, such as English vermilion, and Spanish brown, or majolica.

The red ochres are, for the most part, rather hues and tints than definite colors, or more properly classed with the tertiary, semi-neutral and broken colors; they are, nevertheless, often very valuable pigments for their tints in dead coloring, and for their permanence, etc., in water, oil, crayons, distempers and fresco, and in a low tone of coloring have the value of primaries. The greater part of them are native pigments, found in most countries, and very abundantly and fine in our own; but some are productions of manufacture, and we have produced them in the variety of nature by art. The following are the most important of these pigments, most of which are available in enamel painting:

INDIAN RED,

According to its name, is brought from

*The artificial vermilion used in early manuscripts was termed minium. The name is now, however, used to designate red lead only.

the effect of the pictures with a seeming augmented light.

In hanging pictures much depends on taste; some will have the bottom edge of the frames round the room to range exactly, while others prefer to see the line broken. Due care must also be exercised so that the *shadows* of a subject are not placed next to a window, as then the side needing most light will not recieve it, and a good subject will be spoiled, the owner not knowing why.

It is scarcely necessary to mention that small subjects should be hung down nearer the eye than subjects with larger figures, which can be seen to advantage at a little distance. Pictures hung opposite windows are seldom seen to advantage, as the glass or the varnish reflects the light in an unpleasant manner, hiding the picture from the person standing in front of them. The light in some apartments, too, will suit some subjects better than others, as full light thrown on a picture will bring out its beauties, while a subject of a different class will be better in a room where there is less light.

Brass picture rods are usually placed round the top of a room, but in rooms where this is not the case they are secured by nails, cords or chains. In some rooms where the pictures are heavy, they are secured by brass plates screwed on to the frame, and then screwed to the wall, and this method is preferable, as no cords or chains are seen. Care is required that nails, cords, chains and rings are strong enough, as if either gives way, much damage is the result. It is annoying to come down stairs in the morning and find a heavy frame and picture damaged on the floor, and the remains of broken vases, etc., smashed in its descent. There is to be had gilded wire cord of various thicknesses, that will not stretch like the usual cord employed for the purpose, but even this requires looking to at times, as the friction and strain on a hook or nail weakens the wire.

Where no brass rods are put up, the pictures must be hung on nails or hooks, and these should be well secured. It will sometimes be necessary to plug the wall, but a good hold for a nail is often found at the top of a room. Nails can be had with brass heads, also with heads of white porcelain to screw off and on; with these last care must be taken in driving them, or the bur caused by the blows will hinder the head from being screwed on.

The color of the cord should correspond with the paper or paint in the room as much as possible, so as not to be notices, as it is no ornament to see cords on the wall.

If two or three tiers have to be arranged, it is necessary sometimes for the top tier to lean forward to obtain a good view of them. This can easily be accomplished by putting in the rings about one third of the distance down the sides of the frame instead of in the top, and the lower the rings are put, the more forward it will hang. This method is advantageous where glazed pictures have to be placed opposite the light, as it helps to throw off the reflection.

Where the usual picture cord is used, it should sometimes be looked to, as it is liable to break where it is in contact with the nails and rings, and is constantly getting thinner by stretching from the weight of the picture.

It will be seen from the foregoing remarks that the seemingly simple work of picture hanging requires taste and judgment, and that due care must be exercised to make valuable pictures secure in their positions.—*The Paper Hanger.*

SUBSTITUTES FOR WHITE LEAD.

THE attempt to introduce some other lead compound as a substitute for white lead appears to have a ceaseless charm for inventors, in spite of the very long list of complete and more or less costly failures in that direction. One of the most persevering laborers in this field appears to be Mr. A. French, who is the proprietor of several patents for obtaining the much desired substitute by means of lead "fumes" from smelting furnaces. We recently noticed his proposal to make a black paint from the fume by converting it into lead sulphide. He has already patented the the use of the fume, caught in a special condenser of which he was joint patentee with Mr. Wilson, as a white paint. By a still later patent he proposes to make use of this fume by acting upon it with hydrochloric acid, and thus producing an oxychloride of lead, which is to give "an excellent white pigment requiring very little oil to form white paint, of the consistency of ordinary white lead." We may take it that the condensed fume of Mr. French's former patent has not been largely adopted

as white paint, as he now proposes to further act upon it with hydrochloric acid. It is very curious how the same attempts are made over and over again, and how little inventors trouble themselves to find out what has been done before them in the same direction. The preparation of a white paint from oxychloride of lead was proposed many years ago by Mr. Pattinson, inventor of the process for desilverizing lead which bears his name. He worked out a very beautiful and successful process for preparing the oxychloride direct from galena, and started a works to carry on the manufacture. The product was very beautiful, but it did not succeed in displacing the white lead, nor even getting used to any extent alongside of it. The fact is, that notwithstanding the constant assertions of successive inventors that their particular preparation has the "consistency" and all the good qualities of white lead, it has so far invariably been found by the painters that such is not the case, and finally, after all the generations of experimenters, white lead and the old "Dutch" process for making it, still remain practically unaffected by their rivals.—*Engineering*.

THE PORTFOLIO.

Price Lists for Painters.

SEVERAL painters who have finished learning their trade, and have saved some money, are anxious to go into business for themselves, and have written to us for price lists and methods of estimating on jobs of decorative work. We presume, from the crude and imperfect character of the letters received, that the young men who wrote them have had very meager educational advantages, and that they expect to find a book which will tell them just how much to charge for painting a building or a room of a given size in order to secure a contract and be sure of a profit. We believe some enterprising publishers in England undertook to get up such a book, proceeding far enough with their work to gather considerable information—enough to satisfy them of the futility of their project. In England alone, a country smaller than one of our larger States, there was found to be so little uniformity in prices of labor and material and in the condition of buildings, that it would have been almost impossible to apply the same prices to two different towns. If in England the variableness of conditions was an obstacle to the issue of a price list which could not be overcome, how much more would it prove so in our larger and more varied country.

Towns of wealth and culture require a different order of work from towns which are newer and less favored in this respect; wages of workmen will vary according to the character of work they do and the cost of living—a dollar being more powerful in some places than in others; the prices of material will vary according to quality and somewhat according to cost of transportation; the charge for work must depend largely on the strength of competition between decorators; the condition of the building will affect the cost of painting. In order to issue a price list which would be of value to American painters there must be a uniformity of conditions throughout all the States which in the nature of things is never likely to exist.

There are a few uneducated men of excellent judgment and long experience who succeed very well in business. They make some blunders, some failures, yet win their way to success in time. But there is no certainty in making estimates without a knowledge of values of the material and labor involved and the ability to take accurate measurements, make allowance for varying conditions, and determine the cost, and add to it the reasonable and necessary percentage of profit. There is no easy way to do away with the necessity of these qualifications. Education is a necessary basis for a successful business career. Lacking this, especially where there is competition, a man must succeed, if at all, by superior energy of will or by dishonesty.

Presuming that the young painter has some education, or at least knows how to figure simple arithmetical problems, his first step in dealing with a customer is to find out what kind of a job he wishes done—whether he takes pride in his buildings and does not mind expense if he is pleased, or whether he wants the best he can get for little money. Having ascertained about the sum which it is purposed to lay out in painting, the painter will next ascertain what colors are preferred by the customer, always taking care to influence his choice, so that the job when done will be an artistic one. The dimensions of the portions of the building should then be carefully taken, making liberal allowance for all trimmings, projections, porous walls or lumber, brackets, scrolls etc., and measurements taken in square feet. Find out next how

gray stone, which was met by shingles of the same soft color, and beyond that dark olive green weather boarding, which also covered portions of the second-story, thus intermingling and harmonizing delightfully with the gray shingles. The chimneys, which were outside, of course, were elaborate in construction and afforded all the color effect needed, some black brick being used with the red. A few panels of terra cotta with designs in relief, completed this perfectly simple but quite faultless structure. Such a house is a silent teacher. It has purified and elevated public taste when it has shown how superior is the effect of color which is inherent in the structure, to that which is applied purely for decoration. The gray stone, the shingles and the red chimney are *real;* there is no pretence, no sham, but perfect truth and simplicity. Then, too, the pretty irregularities of surface, the projections, gables and quaint corners were not intended to make a picturesque surface on the outside, but to increase the comfort of the interior. This projection is made by an alcove, which gives so much more space in the library, that by a recess in the dining room into which the sideboard neatly fits. In other words, instead of making the exterior walls of the house inflexible and compelling the interior to conform to them, (as used to be the custom), the interior is worked out with freedom, consulting convenience in placing windows or in shaping the rooms, and the exterior obliged to confrom to it, thus greatly enhancing both comfort and beauty. At this season, when with approaching winter the plants are being housed and window gardening coming into prominence, we wish to tell of a very happy experiment of our own with Coleus, Acaranthus and other colored foliage plants. By constantly heading them down during the summer we had developed unusual beauty and healthfulness in the plants and could not bear to think of leaving them to perish miserably in the cold; so, contrary to all advice and precedent, we selected the finest and most shapely of the plants, potted them and placed them in a room with plenty of sunlight. They took the shock of removal badly at first, but after two or three days began to hold up their heads and were soon firm and beautiful as ever. They were then placed in the four windows of the library, the sunlight through the glass streaming full upon them. As seen from within they presented a gorgeous spectacle. In the usual way in foliage beds they had been dull and dead in comparison with the brilliant hues developed by the light shining through them. German ivy, on each side of the windows was trained over an arch which enclosed this mass of color like a cathedral window. The plants seemed to like this sheltered position and were soon leaning in with luxuriance toward the window panes, a joy to those within and without, and producing more effect than we have ever before or since seen in window gardening. MRS. T. W. PARMELE.

MINERAL SUBSTITUTES.

A RECENT article in THE PAINTER on "Substitutes for White Lead" reasons that because many attempts to introduce substitutes having been made without securing for them a permanent sale and use, therefore they could not have been of much value. That does not always follow. How many people will believe that mixed "prepared paints" will wear as long as white lead—not all mixed paints, but some of them? Time proves these assertions to be facts, yet very few outside of practical painters will believe it.

I am not writing this to puff anyone's goods. When engaged in the business I never used mixed paints that I did not prepare myself. I cannot even say a good word for any special brand, but wish to call attention to a few facts as they came under my observation, and the result after five years of trial in this changeable, severe climate.

After repeated experiments extending over a period of about fifteen years, I became satisfied that white lead was not the *most* durable of all materials used in house painting. Yankee like, I was always ready to try an experiment. I knew that yellow ochre was a most durable paint; then why not any other earthy paints of the same firmness, weight and bulk? A certain dry color was offered me (I do not care to do any free advertising, but withhold the name) and I tried it. It worked nicely; in fact I

was more than pleased with it, because I became convinced that it would spread well and wear well, and that the owners of the building (a modest frame church) could not fail in being pleased with the work and the small amount of lead which was used. More of it could be added to a given amount of mixed paint, without materially changing the color than any other color I ever saw, and it seemed to possess the natural qualities of a covering paint to a remarkable degree.

It worked best with any shade of gray, and it was almost equal to Paris green for spreading; and, as it was a natural, positive color it did not fade. There was a something about its "feel" which impressed me with the belief that if there was anything in paint materials that would equal white lead for durability this article would very nearly, if not quite, fill the bill. I put it upon that church, doing a part of the work myself, because I wanted to see it have a fair trial, and every year I go past that building and it remains to-day as bright as ever.

What more does anyone want? If it had been painted white or almost any color, it would have wanted painting again by this time, or before.

Now it is a pretty safe rule that no one man or set of men can have a monopoly of all the good things of this world, and there are undoubtedly many good substitutes for white lead. If a man with a wooden paddle whittled out with a jack-knife can mix a paint of more than one material that will stand a test like that, how much more ought machinery to do under the guidance of skilled workmen who have made a study of this work for years?

Without entering into the relative merits of white lead against cheap mineral paints, the thought has often occurred, is it not just possible that there has crept into this question of white lead as the only thing for a perfect protection from weather, more or less old fashioned humbug. If white lead really formed a sheeting of uncorroded lead or its equivalent, then we should all be ready to admit that as a protection from the weather sheet lead is the very best thing to be used. But it is not lead. It is only a dry powder mixed with oil. The compound becomes very hard and very adhesive, but does chemistry show that a perfect sheet of lead is formed? I am not a chemist and can not answer the question only in a common sense way, and common sense says, No.

Some old painter will no doubt stand up and tell us that he has seen a building that was painted with white lead and appeared bright after ten or even fifteen years. Yes, so have we all, but it was when all the conditions were favorable, and not the least of the conditions was that an honest workman stood behind the brush. But even that does not prove that white lead will outwear all other colors. The color mentioned upon the little church is apparently as bright today as when put on five and a half years ago. What it may be at the end of ten years we can only judge by present appearances—the probabilities are that the building will neither suffer in appearance nor from the weather in that time.

And finally, without entering into this question chemically, why should the substance called lead, which is not lead, outwear some other substance which is nothing but what it looks like—chemical paint or dry, powdered earth.

We know that from clay a mineral substance (aluminum) is produced which is more valuable for all mechanical purposes than gold; then why should we give way to any one material and allow prejudice to dictate to us what material we should use. It is clear that custom has controlled this matter for years, and the only relief we have is from people who do not care what the material is so that it looks well for four or five years, when they get tired of it and want a new color.

In conclusion, permit me to say that it is my opinion that there are many articles which enter into various colored paints which may be used with confidence in the hope that time and the elements will prove equal to white lead, and that experience will beat chemistry at least half the time.

M. P. THATCHER.