In order to be sure that I had rightly identified the two forms, I sent specimens to Professor Riley. He at once replied: "You are perfectly correct. A. [this refers to the lettering of the specimens] is the form which I described as *Pulvinaria maclurae*, while h. is identical with typical specimens of *Pulvinaria innumerabilis* on maple."

It appears that Robert Kennicott was the first to suggest the name *maclurae*, and Fitch to publish it. This was in the *Country Gentleman*, Jan. 18, 1855. In 1868 Messrs. Walsh and Riley published another description of the osage orange scale, also using the name *maclurae*. Those who do not consider the *Country Gentleman* a proper medium for scientific description may cite Walsh and Riley as nomenclators. If this should be done, it would seem that *innumerabilis* Rathv., published in the *Pennsylvania Farm Journal*, 1854, has at least no better standing, in which case Fitch's name *acericorticis*, given in the *Trans. N. Y. Agric. Society*, 1860, should be employed, or if it be insisted that the description must appear in a purely scientific publication, we must fall back on *acericola*, Walsh and Riley, 1868! For my own part, I would use the earliest name in each case, but one must allow that this is a matter for legitimate differences of opinion.

Thus we have—

(1.) *Pulvinaria innumerabilis*, Rathv., 1854. The Cottony Scale of the Maple.
= *acericorticis*, Fitch, 1860.
= *acericola*, W. & R., 1868.

(2.) *Pulvinaria maclurae*, Kenn. MS., Fitch, 1855. The Cottony Scale of the Osage Orange.
= *maclurae*, W. & R., 1868.

It need hardly be pointed out that the separation of these races or species is a matter of some interest to economic entomologists.

T. D. A. Cockerell.

Las Cruces, N. Mex., July 29, 1893.

Explosive Gas in Hot Water Apparatus.

In the hot water apparatus, used in heating houses, it is well known that gas or "air" accumulates from time to time. This is let off from the radiators where it may collect by turning the "air" tap provided; otherwise the accumulation under ordinary circumstances would interfere with the circulation of water through the pipes. Being curious as to the nature of this gas, on a certain occasion I smelled it when escaping from the tap, and detected a peculiar odor of what I took to be a hydrocarbon compound. Collecting some of the gas, I cautiously applied a light to it, which produced an explosion.

The furnace was a small, upright one, with the water heated between its double walls, large enough to warm in winter time a house of seven or eight ordinary rooms. Anthracite coal was used.

With a larger upright furnace, having tubes for the smoke and heated gases to pass through in its upper part, in addition to the water-filled sides of the first, the amount of gas collecting in the highest radiator in the house was more abundant, especially when anthracite was used instead of bitumenous coal, for which the furnace was also adapted. As a matter of fact, several litres of gas were produced each week in two neighboring houses supplied with this latter style of furnace, during the period of observation,—a few weeks during last winter.

A considerable quantity of the gas was collected for demonstration before a popular meeting of the Institute of Science. Jars of various sizes were filled with the gas, which was burned under various conditions. 1st—The peculiar odor of the gas was tested. 2nd—It burned in the jars when inverted, and otherwise very much like pure hydrogen, giving forth very little light, but much heat. 3rd—The products of combustion showed no trace of carbonic dioxide which could be detected by the lime water test, which was sensitive enough to detect its presence in the room from the respiration of those present. From this it was inferred that neither carbon monoxide nor a hydrocarbon could be present in any considerable quantity. 4th—Pure nitrogen dioxide injected into the gas gave no ruddy discoloration. Hence, there was no oxygen in the gas. 5th—When mixed with air it would explode like air and hydrogen. 6th—It was not convenient at the time to apply any other tests, or any very accurate ones. The impression was formed that the gas must be nearly pure hydrogen.

If it was nearly pure hydrogen it must have come from the decomposition of the water, which would apparently imply a corresponding oxidation of the iron piping or of the heated iron in contact with the water within the furnace. The greater abundance of the gas when anthracite was used suggested that the origin of the gas was the rapid oxidation of the water tubing within the furnace when the heat was particularly intense. If so, every litre of hydrogen produced would mean the conversion of over one and a half grains of metallic iron into "rust."

Again, if a lighted match should be applied to the tap when this gas (pure) is being allowed to escape, the jet would catch fire and "roar" with a hot, bluish flame, of dimensions as terrific as the bore of the tap would allow. As by the "boiling over" of the furnace the small tank and upper coils under some conditions of water pressure may be emptied and filled with air, what would the consequences be were the mixed gases allowed to escape at night with a lamp held in the hand carelessly near such a jet?

The discussion of these demonstrations revealed the fact that no one present ever knew or heard that the gas escaping from radiators might be explosive—not even the builders, plumbers and founders.

Query 1. Is the formation of explosive gas within the hot water apparatus of our houses rare, peculiar to certain furnaces, or is it common?

Query 2. Has an accurate analysis of such gas been made; and if so, what are its constituents?

A. H. MacKay,

Halifax, N. S.

Mineral Wax.

In *Science* of July 14th, page 25, I notice an article on "Mineral Wax," from which the following is an extract: "In the United States it (mineral wax) is mined *in situ* at Soldiers' Summit, Uintah County, and in Emery County, Utah." Permit me to state that Soldiers' Summit of this Territory is in Utah County; that mineral wax or ozocerite is not mined at Soldiers' Summit, nor in Uintah County, nor in Emery County, Utah. I greatly regret to have thus to correct the writer of the aforesaid article, for it would be an especial pleasure to me to be able to report mines and mining of ozocerite from Utah. I think a small quantity of it occurs in Emery County. But it is not yet mined. Of course, it may occur in large quantity in Utah, but up to the present time no satisfactory evidence of such occurrence has been presented. It is, however, possible at present to report ample and satisfactory evidence of the occurrence in Utah of large quantities of three related hydro-carbons, viz.: *wurtzillite, uintahite* and *asphaltum*. Of these, the first has not yet been mined; but the second and third are being mined with some degree of activity.

Uintahite, often called Gilsonite, after a resident prospector and miner in this vicinity, yields black varnish. It is very light, being only a little heavier than water. Its color is black, and its streak is brown or reddish-brown. It possesses a brilliant, shiny lustre, and has a perfect conchoidal fracture, like that of glass, quartz and obsid-