

and out of school, and that these cannot be devolved upon the teacher whose work is strictly, and in the highest sense, professional, the better for the parents, the better for the teachers, and the better for the children.

But the saying of President Laughlin finds another illustration in a very different class of people. How many men and women, especially women, do we meet, who have many really estimable qualities, who are sincerely anxious to live uprightly, many of whom are active members of Christian churches, who yet, from want of moral culture, do many things which are not only not upright, but mean. Many a woman will spend hundreds of dollars on sealskin garments and other luxuries, and grind the faces of her washerwomen and servants to the last cent which their poverty compels them to forego. Others, through sheer lack of moral thoughtfulness, will exact the last pound of flesh, in the shape of service, from the toil-worn bodies of servants, rather than touch a burden with one of their fingers. In days when letter postage was dearer than now, we have seen letters slyly extracted from newspapers which had come through the post, by those who would feel not only insulted but deeply grieved to be told they were not strictly honest. We fear that even yet there are those who do not hesitate to adopt the same means of sending or receiving ribbons, laces, gloves, etc., upon occasion, and who do so without feeling that they are selling their personal honor for a few paltry cents. And what shall we say of those who, when crossing the boundary, put their little dutiable purchases at the bottom of their trunks and officiously expose to the customs' officers the undutiable articles nearer the surface? Why, good, Christian men and women, as we must in charity believe, make a boast of doing it, and never seem to realize that they have not only added virtual falsehood to fraud, but have been guilty of the inexpressible meanness of trading on the officers' trust in their honor, and made a few cents out of the transaction. What great need that the teachers of the young should be themselves men and women not only of strict integrity, but of high moral culture, training up the next generation to be more high minded than their predecessors.

We unfortunately mislaid for a week or two a letter and pamphlet which should have been more promptly noticed. They were sent to us by Mr. Thos. K. Clyde, in reply to a brief note in our issue of Nov. 26th on the Church Disestablishment question. The pamphlet is a "Statement of Facts concerning the church of Scotland, issued by and under the authority of the Sanford Parish Church Defence Association." Amongst the "Facts" it is alleged that "The church is simply the State in its religious aspect, and not a tax," that "the nation did not out of National Property endow the church," that the church of Scotland maintains National Religion, is the church of the people, and of the poor, that the people of Scotland do not wish its disestablishment, etc., etc. Mr. Clyde in his letter also says:—

"If this movement of disestablishment and disendowment were to succeed, the many thousands of pounds sterling which the members and adherents of the church of Scotland annually subscribe for extra parochial and foreign and colonial mission.

ary purposes, would require to be diverted from these more important objects in order to as far as possible make up for this alienation of funds provided by the pious mortifications of our forefathers and their successors down even to the present time."

Neither our space limits, nor the special character of the JOURNAL admit of a discussion of the question, else we should be quite prepared to defend our remark, that "Free and fearless discussion of underlying principles is the one thing the supporters of a state-established and state-endowed church have most to dread." We can find room only to say that while we had the Church of England particularly in mind, in writing, the statement applies, in our opinion, to all established churches, in so far as they authorize the state to step beyond its legitimate sphere, and meddle with spiritual and religious matters, and in so far as they appropriate any portion of the money of the whole people to support the church of a part. No one, we suppose, would advocate robbing any church of endowments or funds contributed by private benefactors.

Special.

ELEMENTARY CHEMISTRY.

WATER.—Continued.

Hard Water.

Water that contains an excess of calcium or magnesium salts is said to be *hard*, while one not so charged is said to be *soft*.

Action of Hard Water on Soap.

Exp. 5.—Dissolve a small quantity of soap in hot alcohol (strong whiskey), and add a little of it to rain water; a "lather" is produced. Now add a little of the soap solution to water containing calcium bicarbonate or calcium sulphate; the soap immediately curdles. There are two organic acids: *stearic acid* $C_{18}H_{36}O_2$, and *oleic acid* $C_{18}H_{34}O_2$, which are formed in most natural fats, the former being about three times the latter. These acids combine with soda and potash to form soap, the combination with soda forming *hard soap*, $NaC_{18}H_{35}O_2$. The lime in the water decomposes the soap, forming *calcium stearate*. This substance constitutes the thin scum seen on the surface of the water when treated with soap. Before it is possible to obtain a lather with a hard water, it is necessary to convert the whole of the calcium and magnesium salts present into insoluble stearates. Since stearates have no detergent action, the presence of large quantities of the salts of lime in water seriously impairs its economic value.

Water which readily curdles soap is called Hard Water.

Temporary Hardness.—We have seen (Art. 132) that when water containing calcium bicarbonate is boiled, the lime is precipitated in the form of calcium carbonate.

Exp. 6.—Half-fill a test-tube with water containing calcium bicarbonate in solution, and carefully add lime-water to it; the solution becomes milky. The lime-water converts the soluble bicarbonate into the insoluble carbonate. The reaction is expressed by the following equation:—

