

Literature and Science.

THE TEACHERS' SORROWS.

THROUGH a noble profession,
It meets with oppression
Again and again,
We poorly-paid teachers
(We don't include preachers)
Are saddest of men.

To acquire our knowledge,
We must go to a college
At very great cost ;
With sighs and with tears,
We study for years ;
Health often is lost.

The famed midnight oil
We burn in our toil,
With cheek so pale ;
Learning Latin and Greek
From week unto week,
Till our sad hearts fail.

Then examiners will pluck ;
'Tis sometimes our luck
To be left in the cold ;
If we're one mark behind
To our virtue's they're blind ;
We're out of the fold.

When we get a situation,
With fond anticipation
We buckle to work ;
Our soul is afloat,
We would carve out a name,
And we slave like a Turk.

Too much is expected
Of us when elected
To a two-fifty school,
With intellects ample,
We can't, for example,
Put brains in a fool.

For a while all is quiet,
Then there breaks out a riot,
For boys must have fun ;
And this age is so polished,
All thrashing's abolished,
So discipline's done.

Those boys must be petted,
By parents abetted,
No matter how bad ;
And should teachers flog them,
Policemen soon deg them ;
To say it we're sad.

And we pedagogues clever,
Whose constant endeavour
Is the good of our flocks,
The magistrates fine us,
Or to lock-up consign us—
Our office he mocks.

Whip a culprit we daren't,
For fear of his parent ;
And when we do flog,
We incur the vile hate
Of some learned magistrate.
Pity the pedagogue.

If the student progresses,
The parent confesses
" His child is so clever ; "
No praise reaches us ;
Our faults they discuss,
Vain our endeavour !

If the student is dull,
And no knowledge can cull
From Kirkland and Scott ;
If we can't even hammer
Into his head grammar,
Woe is our lot !

Should a male teacher smoke,
Or a girl pass a joke,
Our patrons will say,
" They're but a poor sample,
They're not much example,
Let's lower their pay. "

We must shun all the Tories,
Nor speak of their glories,
For fear of the Grits ;
If we lean towards Mowat,
How soon the others know it,
And then we get fits !

Thus poorly-paid teachers,
Those much abused creatures,
Having envy incurred,
A voice from the gallery,
" We pay too much salary ! "
Is very soon heard.

It seems truly horrid
To think that our forehead
Should bear mark of Cain.
So much is against us,
Those things so incense us,
Our life is a bane.

THE LICK OBSERVATORY TELESCOPE.

THERE is something almost romantic in the design and construction of the monster Lick Telescope. Being the greatest work of the kind ever undertaken, presenting difficulties that had never before been encountered, inviting and suffering drawbacks and disasters that seemed to be sufficient to stagger the most persistent and painstaking skill ; watched from day to day by a whole world of anxious observers, hovered over and caressed by the united wisdom of a generation—the lens has come into the world with its great cyclopean eye ready to pierce the mysteries of the heavens. Captain Thomas Fraser, superintendent of the observatory, furnishes some hitherto unpublished and highly interesting information concerning the grinding of the crown glass lens, and the plan adopted for transporting it from Cambridgeport, Mass., to San Jose. On the subject of the grinding, he says that the closest measurement at command was 100,000th part of an inch, but in grinding the great lens it was discovered that even this infinitesimal fraction was too large. A still finer measurement was required in re-

ducing the lens in numberless places to thickness (itself unequal) that would exactly concentrate parallel rays of light, filling a circle three feet in diameter to a point a little larger than a pin. In order to reduce the fine measurement already at command, the following ingenious arrangement was employed by Alvan Clark & Sons, makers of the lens :—A gas-jet was placed before a mirror, which sent the rays of light through a telescope to the great lens, thus magnifying the rays. The magnified light, passing through the great lens, was still further immensely magnified ; and, after having passed through this lens, it was observed through a second telescope, and thus further magnified. In this way the least failure of the great lens to concentrate perfectly was detected, and there was also determined the amount of glass in it, at any given point, that had to be ground off, in order to secure a perfect focus. Thus a measurement of the 2,000,000th part of an inch was secured. It took very little grinding to remove so small a thickness of glass from a given point, a gentle rubbing with the thumb being sufficient, as the glass is softer than common window glass.

The two great lenses for the Lick telescope, on which the Messrs. Clark, of Cambridge, have been so long at work, are now practically completed, and will soon be sent to their destination. The plan adopted for shipping the double lens, worked out by Captain Fraser, is as follows :—The two glasses will first be wrapped separately in fifteen or twenty thicknesses of cloth, drawn very tight. The cloth will be cotton, and in order to make it soft and perfectly free from grit, it will be washed many times and thoroughly beaten. Next to the cloth will come a thick layer of cotton batting and then a layer of paper. The lenses with their covering will be packed tightly in this box. The shape of this box will conform to the shape of the lenses. The felt will be attached with glue, so that no nails will be anywhere near the glass. Outside of this wooden box and enclosing it will be a strong steel box, about the shape of a cube. The wooden box will be tightly packed into the steel box with curled hair. To enclose this steel box will be still another steel box or chest, and the inner steel box will be kept from touching it by a large number of spiral springs covering the whole interior of the outer steel chest. This outer chest will be packed with asbestos, to render it fireproof, and both of the steel boxes will be made airtight and waterproof. The outer chest will be suspended by pivots in a strong wooden frame, and a contrivance has been adopted for turning the chest one-quarter round every day during its progress to California. This is to prevent any molecular disarrangement in the glass and avoid the danger of polarization, it being feared that the jarring of the train will disturb the present arrangement of the molecules, unless the position of the glass is daily changed and all lines of disturbance thus broken up. The glass will be insured for its full value—or rather its cost—\$51,000, and all the precautions mentioned are taken to prevent any accident to it. It would probably be impossible to replace it, as Fell, who cast it, and the elder Clark, who ground it, are both old men. The glass will be shipped by express.—*Boston Transcript.*