

engineers should take up all these subjects; a great portion of them are, however, common to both branches.

There should be laboratory practice in every subject which permits of it. This would render necessary five laboratories. (1) An Engineering laboratory fitted with machines for testing the strength and other qualities of materials which render them suitable for construction purposes; also, with all models of trusses, connections, locks, pumps, turbines, etc.; apparatus for illustrating the laws of dynamics; an experimental engine arranged to work, condensing and non-condensing, with or without steam jacketing, etc.; standard gauges of all kinds, etc., etc. (2) Chemical laboratory. (3) Mineralogical and Mining laboratory. (4) Electrical laboratory. (5) General Physiological laboratory.

The establishment of practical shops under competent foremen for the purpose of giving instruction in manual processes, is sometimes mentioned as a *sine qua non* in an engineering school. This is a mistake. There are shops all over the country into which admittance may be easily gained. If, after an engineering school is fully equipped with professors, laboratories, lecture and drafting rooms, etc., there yet remains money to be spent, it might be profitably spent in erecting such shops, but certainly not before.

The staff should be sufficiently large to enable the instructors to be specialists in their respective departments, and the same professor should not be required to teach astronomy and the theory of the steam engine—not to speak of half a dozen other subjects equally incongruous from a teacher's point of view. The professor of Engineering in a technical school not a thousand miles from Toronto is, in this respect, placed in a much more awkward position than a former professor of Chemistry and Botany in the University of Oxford. When this gentleman visited a foreign chemist he introduced himself as professor of Botany, and when visiting a botanist he became professor of Chemistry.

There should be at least two courses in each subject, an ordinary course and an advanced course. There should be a well-arranged system of options in order to enable the student to work in the latter years of the course in the direction of the special part of the profession in which he proposes to practise. The course should be of four years' duration. In the last year of the course the more practical part of the work in each department may be done, such as the preparation of specifications and forms of contract, making out bills of quantities and estimates, making detailed designs and studying practical processes of such kinds as may be profitably carried out in a school.

A four years' course would also afford time to the student to learn French and German sufficiently well to read technical works in these languages. It is a mistake to suppose that all works of importance in foreign languages are immediately translated into English. It would be an excellent thing to have a few French and German text-books in the work of the later years.

That the engineer should have as good a general education as any other professional man goes without saying.

Educated on the lines above indicated, the graduate is ready to devote his whole attention to the absorption, so to speak, of practical knowledge gained from experience. He loses no time in studying a difficult problem, but attacks it in the right way. He gains more practical knowledge in one year than he would, without such an education, gain in three, and after several years in practice, if he possesses common sense, energy, and business tact, he becomes recognized as a rising man in his profession.

From this hasty sketch it will be evident that the education of the engineer comes under the head of Higher Education. It has as strong a right to form a part and parcel of university work as education in law and medicine. The amount of money spent annually under the direction of engineers, and the immense responsibility under which they lie to the public with reference to safety of life, limb, and property, makes it of the utmost importance to the state that they should have every opportunity of being properly educated.

J. GALBRAITH,

School of Practical Science.

THE SPRING ON THE HILLSIDE.

Cheerily, cheerily,
Dashing and splashing an l singing and ringing,
Down the green hillside the brook goes springing,
The tiny spray in its mad mirth flinging,—
Cheerily, cheerily;

Out from the parent caverns deep,
Where the dark-hued waters coldly sleep,
And the pearly drops from the rock-roof weep.

Cheerily, cheerily,
Fresh from his play,
Hot and flushed with the summer day,
The boy kneels down on the green hill-side,
And sinks red lips in the crystal tide,—

Cheerily, cheerily;
And the cool, rich draught through his veins is creeping,
And he feels fresh life through his strong limbs sweeping,
His eyes are bright,
With an added light,
His young heart with a new delight
Is throbbing and leaping.

Wearily, wearily,
Stick in hand, the old man comes creeping,
Aged and spent,
Painfully up the laboured bent,—
Wearily, wearily;

Seeking with dim old eyes the place,
Where, in his boyhood, with quiet grace,
The pool lay darkly sleeping.
The stream no more in flashing pride,
Comes sparkling down the mossy hill side,—
No longer its sprays are leaping.

Choked and dry is the streamlet's bed,—
Choked and dry is the glassy pool;
And the autumn breezes overhead
Rattle the branches brown and dead,
Whose green and grateful shade,
With its swift reflections, soft and cool,
His childhood's shelter made.

Oh, cruel the blow to the old man's heart,
Ah, cruel the bitter pain!
As he turns away with a stifled sigh,
From the grave where his youth's dear memories lie,
That he never may know again.

Oh, springs of my childhood, why rise ye not
From your heart-caves as of yore?

Why know I no longer your curbless mirth;
Your bounding joys no more?

Why leap not now the flashing streams
That cooled my boyhood's brow?

Oh, fountains of truth, in the days of youth
Why were ye more sweet than now?

Vain, vainly I plead. All dull and drear
And dry is the streamlet's bed;

And brown and sere with the latening year,
The heart's young joys lie dead.

DAVID MACDONALD.

SLAV PROVERBS.

In the Christmas number of THE VARSITY, the Rev. J. F. McCurdy, Ph.D., treats in a most interesting manner of the Folk Lore of Ancient India, where dwelt a people of Aryan extraction, still considered by many to approach nearest in point of language to the primitive Indo-European, who lived in the days when Celt, Teuton, Slav, Græco-Italian, Indian and Eranian were yet in process of evolution. Now that the tide of belief seems veering in the direction of a North-European origin of the Aryas, I venture to call the attention of those interested in the subject to the rich store of folk-lore to be found amongst the Slavonian peoples, who, Dr. Latham years ago declared, possessed a language as ancient and as primitive as that spoken by the dwellers on the banks of the Indus and