

OLD BOYS' ASSOCIATION.

To the Editor's request for Notes I have replied, like the photographer, that they would be "ready on Friday." It is now the third of these Fridays and somehow the Notes are here.

The last Notes closed with an optimistic view of the Soiree which was held on March 12th, 1925, and these open with Old Moore's famous remark, "I told you so." Over 450 guests thoroughly enjoyed themselves in spite of the "never appearing trick" of the conjuror—and the Council at last knew, rest.

The Industrial difficulties made it impossible to mature the various activities planned for the summer and after the Soiree the Officials and Council were the only active members of the Association.

At the Annual General Meeting, Mr. J. Fletcher, carrying with him the well-earned thanks of the Association, gave place to Mr. P. Stockdale, thus adding another to the list of active and worthy Presidents.

Messrs. J. A. Brierley, C. H. Pickford and R. Barlow were elected Vice-Presidents.

The Honorary Treasurer and Honorary Secretary received the thanks of the Association and immediately began to qualify for another set.

New Members of the Council are Mr. H. Desden and Mr. E. Partington.

The Session opened with a Smoking Concert in the Reform Club. There was a poor response to the appeal for entertainers and a heavy burden was thrust upon Mr. W. C. Thorpe and Mr. J. A. Bunting, a burden well and truly borne, and with the help of Mr. D. Swallow's Gramophone and a few willing members, the gloom threatening the proceedings was dispelled. The Council hope that the talented members of the Association will come forward and restore the Smokers' to their former position of honour in the Association's programme.

Attempts have been made to form Rugger and Soccer Sections of the Association—of these, only Soccer survives, and the support for that is not overwhelming.

It is hoped that, with revised conditions, the proposed Golf Tournament will receive more support. The Council are already giving attention to the Summer Programme. Friday, December 3rd, is the night of the Soiree—a little earlier this time—but, judging by the number of tickets sold, just as popular.

The Annual Dinner is to be held on Wednesday, Jan. 12th, and Old Boys are asked to make a special note of that date.

There has been a rapid increase in membership, and, with increased and more active interest from members the Association should soon occupy its real place in the life of the School, and even extend its influence to the affairs of the town. The Council welcomes, and seriously considers, any suggestions from members.

G.R.

We were very pleased to hear from S. R. Chaloner, who wrote from Algieras. He has been enjoying a holiday and good weather in Spain.

We have also heard with pleasure from Lieut. A. S. Howcroft, of the British Army of the Rhine.

Congratulations to W. S. Potter, on gaining The "Professor Miles Walker" Scholarship at Victoria University; and to H. Potter, on passing The Preliminary Chartered Accountants' Examination.

MANCHESTER CIVIC WEEK.

On Thursday, 7th October, the whole of the Sixth Forms, accompanied by Dr. Potter and Mr. Albery, paid a visit to Manchester, for the purpose of inspecting the works of the British Oxygen Co., and attending the University, where various experiments were being demonstrated.

At the Oxygen Co. we were shown the cylinder testing apparatus and the manufacture of Oxygen from the air, and afterwards a practical exhibition of its uses for cutting iron, etc., was given.

Below is a full description of the process.

Leaving the Oxygen Co. we managed to make our way (after several tramcar escapades and street crossing incidents!) to the University. Here the party broke up, and in smaller groups followed the various experiments, which were far too numerous and varied to be mentioned here.

We all feel very grateful for the opportunity of seeing the commercial preparation of Oxygen, together with the wonders of liquid air, and of realising, if nothing more, the extensiveness of the University, and so wish to offer our thanks to Dr. Potter and Mr. Albery.

E.W.

THE MANUFACTURE OF OXYGEN FROM THE AIR.

Firstly, the gas has to be sent out at high pressure to reduce its bulk, and, to this purpose, seamless steel cylinders are used. These cylinders are fitted with strong brass valves, and the gas is compressed in them and sent out to customers at a pressure of 120 atmospheres, which is the standard filling pressure in this country for all gases which do not liquify at atmospheric temperature: i.e., those gases whose critical temperatures are below the usual atmospheric temperatures prevailing in this country. Before being put into service these cylinders are very carefully tested by 3,000 pounds per square inch by Hydraulic Pressure. At the same time the total elasticity and permanent set (if any) are noted on a water gauge.

Passing on to the Oxygen Plants, the air supplied for the production of Oxygen is purified from Carbon Dioxide by means of either Lime or Caustic Soda purifiers, or both. The air compressor is driven by a 250 horse power motor, and the important point to note is that the heat of compression is removed by circulating water. The final pressure (between 400 and 500 pounds per square inch) is reached in three stages, the heat of compression in each case being removed before proceeding to the next stage of compression; and, after the final cooling, the high-pressure air is passed first through heat interchanges, where it is pre-cooled as far as possible by the outgoing gasses (Nitrogen and Oxygen) leaving the plant. It is then passed on to a point in the separator, where the stream divides. Here, by a system of heat interchange, as much of the high-pressure air as possible is liquefied by allowing the boiling liquid Oxygen to absorb heat from it to supply the latent heat of Oxygen. The remaining portion of the high-pressure air is passed through an expansion engine, where it is allowed to expand, and also made to do work.

After expansion, the heat abstracted during compression is missing, and the result is a big drop in temperature, and to this cold producing effect must be added the cold produced by abstracting heat energy at the same time in the form of mechanical work. The sum of these two, with the pre-cooling to which the high-pressure air has been subjected in the heat interchanges, is such that the engine exhausts liquid air together with some gaseous air cooled down to the liquefying temperature. The two supplies of liquid air, namely that obtained from heat inter-

change, and that obtained from the expansion engine, are collected in the base of the separator proper, which completes the first stage of the process: i.e., the preparation of liquid air.

The second stage of the process is the fractional distillation, or, as it is called, "Rectification," which is carried out by passing the poor liquid (that is, poor in Oxygen) down through a series of trays, in each of which an ascending column of gasses, Nitrogen and Oxygen, are passing. The outgoing Nitrogen in each case being washed by the poorest liquid, and in each successive tray meeting gasses richer in Oxygen than itself, becomes richer in Oxygen as it descends the column. Finally, on arriving at the outlet from the last tray the liquid has become practically pure Oxygen. (These fractionating columns are very similar in operation to those in use for the fractional distillation of Benzine in chemical works, and for the production of alcohol by fractional distillation in the continuous "Coffey" Still). The liquid Oxygen is connected in a vessel called the "Vapourizer," and is supplied with heat to vapourize it, and to warm it up to nearly atmospheric temperature by causing it to pre-cool the oncoming high-pressure air referred to previously.

The Oxygen gas now passes away to the gas holder, from which it is drawn by gas compressors, which fill the cylinders at 120 atmospheres pressure ready for use in Industry.

This pressure is so high that it cannot be satisfactorily controlled by ordinary taps, and for the purpose of maintaining low and steady working pressures, suitable for blow pipes, special regulators or pressure reducing valves are employed.

Using suitable blow pipes, blocks of steel up to eighteen inches thick can be cut by means of Oxygen, after pre-heating the metal at the starting point of the cut by means of a flame consisting of Acetylene and Oxygen, which is combined in the same blowpipe with an independent jet of Oxygen which actually does the cutting. Cast Iron can also be cut but is more difficult than steel.

Practically all the metals used in Commerce can be welded by the Oxy-Acetylene flame. Liquid Oxygen is being largely used to-day in connection with Carbon cartridges, or those of Hydro-Carbon materials, as an explosive.

H. J. WRIGHT, L.VI.

CLASSICAL LECTURE.

On November 18th, owing to the courtesy of the Classical Association, we enjoyed an interesting and edifying Lecture on "Greek Boys and Girls," delivered by Miss Lister.

Greek boys and girls differed greatly in different states, but perhaps the greatest contrast was afforded by the two cities Athens and Sparta.

The Spartan state owed its origin to conquest, and its preservation required the subjection of the conquered; thus the whole system was directed only towards efficiency in war. Spartan boys were trained from the first to become soldiers. When they reached the age of seven they were placed under military supervision in herds or packs, subjected to rigorous training, and taught discipline which was the Spartan law of life. Endurance was scarcely less important, both boys and girls suffering privations in food and clothing and undergoing severe tests of stamina. It was their custom to swim across the Eurotas every morning in all kinds of weather. Every year there were games and fights, in which there was often bloodshed. Spartan boys rarely acted on their own initiative, for they were taught only to obey orders, but to prevent their becoming too mechanical they were sent once a year to the snow-capped Taygetus (the mountains behind Sparta) to forage and fend for themselves. In these expeditions stealing was almost encouraged. A Spartan's boyhood was passed in a training School, and his manhood in a barrack.

Intellectual training was comparatively neglected, music and "laconic" conversation being practically the only arts taught. To foster unity of action, mass dancing and chorus singing were practised. Duty to the State came before any individual or personal consideration, and everything was done with a view to military utility and efficiency.

Spartan girls were thoroughly trained in athletic exercises as running, wrestling, dancing, and had access to games from which matrons were barred. Young people of each sex met each other without restraint. Girls and women were valued only as wives and mothers of soldiers.

While the Spartans learned for discipline, the Athenians learned for pleasure.

They loved the æsthetic and devoted a great deal of time to intellectual culture. The purpose of education was not to stimulate or gratify intellectual curiosity, but to develop in the future citizen the physical, mental and moral excellence which might fit him to do good service for the State. Till they reached the age of seven, Athenian boys and girls stayed at home in the care of their mother or a nurse, and were taught good manners and ancient Greek legends. When they went to School they were accompanied by a pædagogos (child leader), who waited for them and saw that they did their work. (The pædagogos was generally a slave who was unfit to do any other work; he was not often respected by his charges). The main branches of education were gymnastics and music and generally ran side by side. The latter occupied the early part of the day while the later hours were given to physical recreation. Special attention was paid to a child's musical education, and, contrary to the Spartan custom, individual efforts were encouraged. Athenian boys were very fond of physical exercises as they all wished to have well developed bodies. They were sent to training schools and gymnasia where they were taught boxing, wrestling, hurdling, horsemanship and all kinds of athletic sports. Swimming and aquatic sports were also very popular, as Athens was a great naval power. They had strange indoor games—one being to toss the dregs of a wine cup at a mark in the ceiling—but some of their customs were not unlike those of our own times.

Athenian girls had not the freedom of their Spartan sisters, but were thoroughly domesticated, having few interests outside their own homes. Instead of running and wrestling they kept in the house playing at draughts, or tending their animals. It was not decorous for an Athenian woman or girl to speak to a man in the street, and there was hardly any social intercourse between women and men not in the same family.

Many excellent slides were shown illustrating the Lecture which was in every way enjoyable and instructive.

O. MILLS.

THE PRIMARY TEACHER.

I have been requested by the Editor to write some account of the method of entry and the prospects of the teaching profession, and I indicated that I should deal almost entirely with the Primary Teacher. Entry to the teaching profession by means of a University Course opens up so many different avenues that only a volume could treat it adequately. This is not to say that the two systems

do not interpenetrate. A fourth year of professional training is now almost a necessity for the graduate entering a Secondary School, while *per contra* a University degree is required for the higher posts in the Elementary School world.

The present position of training for teaching is somewhat unsettled owing to the fact that the recommendations of the Departmental Committee on the Training of Teachers, which reported last year, are being differently applied in different places. The first thing the boy who intends to take up teaching should do, is to acquaint himself with the provisions made for him by his Local Education Authority. A scholarship similar in advantages to the usual school scholarship, often with some maintenance grant, is available in the provisions of most authorities for accepted candidates for teaching from the time of passing a leaving examination such as the School Certificate at about sixteen till the Student can be admitted to a training college at the age of eighteen.

Entry to a training college is now a matter of much competition, and the training colleges can, on the whole, demand a higher academic standard than that required by a provincial University. To take a typical instance : for 66 vacancies in a particular College in September, 1926, there were 450 applicants, all of whom had passed a leaving examination, and of the successful candidates virtually every one had obtained matriculation and 44 had passed the Higher Certificate course. An intending Student then, should make his application early, and to make his acceptance quite sure he should obtain the Higher Certificate. With such large numbers of applicants, the Higher Certificate is likely to be in practice an indispensable requirement of all Colleges, even though in theory a Candidate is qualified for entrance by passing a leaving examination of School Certificate type.

Training Colleges divide themselves into two main classes : the older denominational Colleges, now round about their centenary, and the newer Colleges mostly established this century by big local authorities such as Leeds or Sheffield. The older Colleges, though deriving their foundation and position from denominational bodies, mostly Church of England, admit freely students of any denomination. They are all resident Colleges, and provide a strong internal life similar to that of the older Universities, and in them the student gets the inestimable advantages of the social world and sports activities of a corporate body, which are of great value to him in later life.

The newer Colleges are chiefly mixed Colleges, and many are non-resident, so that the student must travel to them daily, or live in lodgings. While their buildings are more modern, the student necessarily does not get the same corporate advantages. College Fees, it should be mentioned, range from £25 to £40 per annum, and details of the various Colleges can be obtained from Local Education Authorities or Principals.

The large majority of students take a two years' course consisting of further study and professional training for the Teacher's Certificate. In addition, however, almost all Colleges have facilities for degree courses leading to the London External Degree or to a Degree of some local University to which they are affiliated, combined with the 'Teacher's Certificate in a 3 or 4 years' course.

Our average student leaves College at twenty, say, a Certificated Teacher. What are his prospects? There is, on the whole, a shortage of men teachers, and if his College course has been satisfactory, he should find no difficulty in obtaining a post. For salary he is then governed by what the public knows as the Burnham Scales, but these vary considerably with locality. He may go into a school in a rural area where living is cheaper, and start at £170 per annum rising in about 15 years to a maximum of about £325. Or he may go into an industrial area like Lancashire or the Yorkshire West Riding, where his minima and maxima are about £180 and £360 respectively. He may look forward at sixty to a pension for which he pays in part. He can also count on his five working days a week, and his eight weeks' holiday each year, while his post and salary are virtually assured. On the other hand, his work is not mechanical, and deals with living beings, and while this has many compensations, it means a life of some strain especially if he works in a town area.

Such are the prospects of the assistant, but for those qualified by professional or academic success there are headships with salaries from £350 for the smallest rural schools to £600 for the largest town schools. Even beyond that the avenue of promotion is not blocked, for the more responsible and higher paid posts of the administrative and inspectional services as well as posts in the Secondary School world are open to the successful teacher.

In effect, then, it will be somewhat late before the teacher commences to earn his living, though he will have added to his experience a College life of great value to him. Once started,

however, he has an assured income with a fair amount of leisure, though in practice that leisure will have many calls upon it for social work due to the position he occupies. For the right man it is always a life full of human interest, and there are posts of greater and greater importance open to him if he wishes to advance in his profession.

J.L.B.

COTTON.

Let it be understood, at once, that this sketch is not intended for the expert. Its object is solely that of arousing a little more interest in the romance of England's greatest industry. How else can we think of Cotton? And so to the facts.

This textile fibre, as we meet it in commerce, is a convoluted ribbon of almost pure cellulose $\frac{3}{8}$ to $2\frac{1}{2}$ inches long and 0.0005 to 0.0009 inches wide, with a cavity running nearly throughout its length, open at one end and closed and pointed at the other. There are 110 to 170 convolutions per inch and the direction of twist is reversed after about every four. In its natural state the open end is attached to the seed of the cotton plant. Very many botanical species adopt this method of protecting the seed and aiding in its transport, but the seed-hairs of *Gossypium* are outstanding in the qualities desirable in a textile fibre.

The cotton plant is a member of the Malvaceae (mallow family) and of the genus *Gossypium*. The number of fairly distinct species is large owing to centuries of cross-fertilization, but only a few are of commercial importance. *G. arboreum*, *G. neglectum*, *G. herbaceum*, *G. brasiliense*, *G. barbadense*, might be mentioned. No short satisfactory description of the plant can be given owing to the wide differences between species and the marked susceptibility to conditions of growth. It might be pictured as a bushy plant 3 to 6 feet high, the branches wide-spreading and tapering to a pointed top. The leaves vary much in appearance but are divided into 3 or 5 lobes more or less definitely. The flower resembles the hollyhock in shape but is more tubular and is surrounded by three large bracts. It may be lemon-yellow, creamy, or red. The boll (containing the hairy seeds) is $\frac{3}{4}$ to $1\frac{1}{2}$ inches in diameter, rounded or pointed, and exhibits various shades of green. When ripe it bursts open and the seed-cotton hangs down often 2 to 3 inches. *Gossypium* is profitably grown in semi-tropical or tropical countries, the cotton belt extending 40° on each side of the equator. Experimentally grown plants can be seen during the summer at the Shirley Institute.

The utilization of the cotton fibre is not a modern industry, for it is certain that the beginnings in both technique and art retreat beyond the veil of history into the earliest phases of human development. India was for centuries the leading cotton centre of the world and remained so until Lancashire became supreme about 150 years ago. Spain was the first European country to grow and manufacture it. Not until the close of the twelfth century is any mention made in England of cotton. Gradually a textile trade was built up but it was of very limited dimensions because no marked changes were effected from the ancient methods. Suddenly there was a burst of inventive genius when, between the years 1764 and 1787, Hargreaves, Arkwright, Crompton, and Cartwright respectively introduced the spinning jenny, roller spinning, the spinning mule, and the power loom. The nineteenth century was a period of hectic invention but it was directed towards the perfection of detail, the enlargement and speeding-up of the machinery, and the co-ordination of the mechanical devices to the almost complete exclusion of hand processes. Four great inventions of this period are the saw gin, the ring frame, the Jacquard loom, and the Draper loom. Nowadays, spinning and weaving are advanced arts and fundamental changes are scarcely to be expected.

Having touched upon the history of cotton we might, with advantage, trace its passage through the various industries.

Practically all the important cottons of the world are grown as annuals. Wise farmers obtain their seed either from marked plants or from some agricultural seed farm. The dates of planting and fruition depend entirely on the climate and soil and type of seed chosen, except that it is possible to hasten the growth a little by the judicious application of manures. When the bolls open, the seed-cotton is hand gathered mostly by coloured labour. No machine has yet been invented satisfactorily to perform this operation although it is badly wanted because in this alone about $\frac{1}{4}$ of the total cost of raising cotton must be spent. On the advent of a successful picker cotton will cease to be a black man's crop. The seed-cotton is next carted to the ginnery. Here it passes first through an opener to disentangle it somewhat, and then through the gin itself, where the cotton (lint) is separated from the seed. The latter constitutes 50 to 75% by weight of the seed-cotton and is still covered with short hairs (linters). These short hairs are removed in a subsequent operation. Both the linters and the naked seed are the raw materials for other large

industries. The ginned cotton is loosely baled and sent to exportation centres at which very tightly compressed bales are made in order to conserve space in transport. It travels through the exchanges and makes its way to a spinning area.

Arrived at the mill, the cotton is dealt with by a series of machines which separate any loose dirt and produce a continuous uniform web of fibres—a lap: the bale-breaker loosens the mass and removes some impurities, the opener carries on the good work, and the scrotcher purifies the material and forms it into laps. Machines may be duplicated to obtain greater evenness and purity; for instance, say, 5 laps may be fed simultaneously into a finishing scrotcher. The final lap passes on to the carding engine. This cleanses the cotton still more but its principal duty is to convert the lap, in which the fibres are all higgledy-piggledy, into a sliver, a very flimsy rope with the constituent fibres all approximately parallel lengthwise. For the higher classes of work the card sliver is sent, by way of one or two preparatory machines, on through the comber, which grips small portions of the sliver lap, combs out the dirt and all fibres shorter than some determined length, and carries the combed portion forward to the preceding one so as to make a sliver. Since uniformity of fibre length is an important spinning quality, combed cotton can be spun finer than carded. In order further to promote uniformity, the slivers are repeatedly united and drawn out on the drawing frames. Thus six slivers may be fused and drawn out six fold and the process repeated. The drawn slivers continue through flyer frames (slubbing, intermediate, roving, and jack). These successively reduce the thickness of the sliver by drawing it out, increase the uniformity by combining several slivers, and add more and more twist. The final process in the mill consists in spinning the roving into yarn. There are two distinct systems in use here—ring spinning and mule spinning. In both cases the roving is further drawn out and twisted and we arrive then at the familiar cop. The fineness of the yarn is expressed in counts, the latter being the number of 840 yard lengths (hanks) per pound weight of yarn. The latter may be further processed before it goes to the weaving shed. It may be doubled, i.e., two or more yarns twisted together, giving a stronger, smoother, and more elastic thread than a single of the same count. It may be gassed, i.e., very rapidly passed through gas flames or through electrically heated tubes. This has the effect of burning off any loose fibres whilst leaving the body of the yarn unaffected. There are also other yarn finishes too specialised to mention. The mass of dirt and short fibres removed in

the processes in the mill is sold to cotton waste firms, who work it up broadly on the same lines as for raw cotton, and obtain coarse yarns or specialised products such as wadding.

The yarn which arrives at the weaving shed is of two sorts—warp and weft—the former being the stronger owing to a greater number of twists being put in during the spinning. The procedure adopted depends partly on the kind of cloth ultimately desired, and only the simplest will be described. The warp yarn is transferred to warping bobbins. A number of these bobbins, equal to the number of warp threads required in the cloth, is then wound on to a large roller—the warper's beam. A set of beams (usually five) is taken to the slashing or sizing room. The main object here is to render the warp threads stronger so that they will be able to withstand the violent stresses to which they are subjected in the loom. This is accomplished by passing them through rollers immersed in a paste containing starch or other adhesive and then drying by passing them round steam-heated cylinders. They are next wound on to weaver's beams. These are taken to the back of the loom and drawn in, i.e., the warps are threaded through the eyes of the healds and the teeth of the read of the loom. The reed resembles a large comb and into each space is put one warp thread. The weft is placed in the shuttles and all is ready for the weaving to begin. Three movements enter into this process—shedding, picking, and beating up. First, some of the warp threads are raised above the others by the motion of the healds, then the shuttle is sent through the space, leaving a weft thread in its wake, and, finally, the latter (called a pick) is hit up into close contact with the previously woven fabric by the forward motion of the read. As the read goes back the healds shed the warp in a different way, and so on. The sequence in which the warps are shedded, on which depends the kind of cloth produced, is capable of endless variation.

At this point the character of the industry again sharply changes. The engineer is not entirely dispensed with, but his activities are not nearly so important. Some of the cloth is used as it is in the grey, but much goes forward to the bleaching, mercerising, dyeing, or finishing concerns. These processes may be applied to cotton at earlier stages of its manufacture. Thus even raw cotton is bleached, mercerised, and dyed. The actual methods used depend largely upon the stage at which they are employed. By far the greater quantity is bleached in the woven state and this alone will be touched upon. The pieces of cloth are stitched end to end to form a continuous "rope" for greater

convenience in handling. This is passed through a shearing and moting machine to remove surface dirt and imperfections and then singed, i.e., sent very rapidly over red hot plates or rollers or through a Bunsen flame, since all surface down adversely affects printing. The next treatment depends upon whether the cloth is subsequently to be dyed or not, but may consist of a combination of the following:—thoroughly wetting in hot water; treating with a solution of a starch-removing enzyme; passing through a dilute acid solution (souring); boiling with or without pressure for various times in a huge vessel (called a kier) containing mainly lime, soda ash, or caustic soda (scouring); washing; bleaching proper (chemicking) by means of solutions of bleaching powder, sodium hypochlorite, hydrogen peroxide, perborates, etc., according to the severity of the treatment required; souring; washing. Sometimes the cloth is passed through a solution of an antichlor in order to make sure of removing the last traces of chlorine. Great care is essential in conducting these operations if one would obtain a final product which has suffered less than the maximum accepted amount of tendering.

The object of mercerisation is to impart an enhanced lustre. This is caused by contact with strong caustic soda solution and is due to the cotton fibres losing their convoluted ribbon form and becoming more cylindrical. The fabric is usually thoroughly wetted out in water, immersed in the alkali with or without pressure for about five minutes, washed, soured, and washed. Other alkali hydroxides effect mercerisation but a comparison has shown that caustic soda is by far the most potent.

The dyeing of cotton takes place at all its stages of manufacture. The tendency is to dye more and more in the yarn. It is an extremely specialised art, and since mistakes are expensive the remuneration tends to be rather high. The process is very interesting—extremely interesting—but unfortunately it cannot be discussed without technicalities. The mechanical operations of dyeing are simple and consist of immersing the material in the dye bath followed by washing and drying. Most cloth is not submitted to this process since, unless the weave is composite, only one colour can be obtained. Instead, the colour is “printed” on. The material to be printed must first be rendered chemically pure by scouring, and (for light colours) bleaching, and surface blemishes removed. In all cases the dye must be mixed with some other substance in order to produce a thick paste which will not spread when applied to the fabric. Starch is usually employed. The substantive dyes are just printed direct. Some colours are

mixed with albumen, printed, and then fixed by steaming which coagulates the protein and so holds the dye. In dealing with the mordant dyes the mordant salt is printed on, decomposed and fixed by steaming, and then the whole fabric passed through a dye bath, when only those portions containing the mordant take up the colour. In other cases the material is impregnated with some such dye-producer as an aniline salt and dried, but not fixed or developed. The cloth is then printed with chemicals which decompose the substance previously impregnated wherever the two meet without forming a colour. The rest is next developed. Printing machinery is now quite elaborate, for as many as 20 colours are sometimes incorporated in one design. All goods should be well soaped and washed. A portion of the same plant is often used as an integral part of the system for developing the dye.

Now we come to that varied and elusive art of finishing. Most of the information is held by practical men, and as the processes employed are very empirical one can only obtain reliable information by experimenting oneself. This refers to finishes affecting feel and appearance. A distinct semblance of linen, wool, silk, and embossed paper can be obtained by methods more or less commonly known. Other finishes such as waterproofing and flameproofing are well understood. Another type of finish is that of tinting American Cotton so as to imitate the more expensive Egyptian.

So the material goes again on to the market and some finds its way back to the fields from which it sprang.

It is not proposed to trace the confluence of all the industries, trades, and professions which the cotton industry has either called into being or greatly augmented. They are too numerous. A word or two, however, might be said about research.

All thoughtful activities have their beginnings in research. Some outstanding ones in the cotton industry are mentioned above. It is also true that no undertaking can expect to remain predominant unless it continues to research. The news of its success travels with its products and the knowledge essential to their production travels too, but more slowly. In order to retain leadership one must assume this will occur and so be for ever pressing forward. It is often advantageous not to apply new discoveries immediately but to hold them in reserve against some unexpected advance on the part of the competitor. The cotton industry to-day is suffering for a lack of sufficient observation

in the past of these ideals. The inventions of the late 18th century deservedly created us easily the foremost cotton manufacturing country in the world. We have not been content with merely holding that position, but have strenuously competed amongst ourselves in open market for the immediate gain that was to be obtained. We have lost men and even ideas to the foreigner. In one respect especially have we lacked sufficient foresight, i.e., in being content to go on using as our raw material a substance in whose production we had no direct control. In this connection Oldham was the first to bestir itself, for in 1901, on the suggestion of Mr. B. Crapper, the Oldham Chamber of Trade appointed a committee to investigate into the possibilities of growing cotton in countries other than America and especially within the Empire. This led in 1902 to the formation of the British Cotton Growing Association of Manchester. For 20 years this was the only body promoting the growth of Empire Cotton. During that time great strides were made of a pioneering nature, and it was definitely shown that this crop could be economically raised in many of our possessions (African Gold Coast, Lagos, Nigeria, British East Africa, British Uganda, Nyassaland, Rhodesia, Soudan, Western Australia, Queensland, Kenya, Tanganyika). Not before 1921, however, were such efforts considered to be of national importance. In that year the Empire Cotton Growing Corporation was formed under Royal Charter to continue and develop the work inaugurated by the B.C.G.A. It is representative of all the interests concerned in the cotton industry and also of the Government, and is in possession of an assured income. The matter was thus lifted out of its previous philanthropic sphere, and there is every reason to suppose that cotton growing within the Empire will now proceed apace. In 1921, the B.C.G.A. was responsible for 165,000 bales. At present, the crop is 300,000 bales. The E.C.G.C. has innumerable duties to perform, amongst which might be mentioned the care of transport facilities, the provision of credit, the guaranteeing of the price of the cotton grown in recently opened areas, the supervision of the seed, and the provision of trained men to act in an advisory capacity on all matters connected with cotton growing. During the last four years it has offered an increasing number of studentships for training in the growing side of the industry. One of our Old Boys is now holding one of these at the Imperial College of Tropical Agriculture at Trinidad. The Corporation intends in the near future to establish a Research Institute in some cotton growing country. Meanwhile, problems of a fundamental nature are being attacked at various Colleges here. It also publishes quarterly the "Empire Cotton Growing Review." On the technical side research is being carried out by the British

Cotton Industry Research Association (Shirley Institute, Didsbury, Manchester), where the properties of the fibre trade are investigated. Some of its activities are published in the "Shirley Memoirs." Two Old Boys are now engaged there. These Institutions form a strong link between the growers and ourselves, and their co-operation cannot do otherwise than lead to a greater efficiency and a better understanding than heretofore.

With regard to employment in the cotton industry it will be realized how varied its nature may be. Botanical, physiological, pathological, genetical, entomological, mycological and other preferences can find ample scope on the growing side. Engineering physics and chemistry, with their specialised branches, are applicable to manufactures in an amazing variety of ways. Administrative positions are numerous and connected with any aspect of the trade. At the present time the posts in the industry are scarce, but this is only a passing phase. The great thing is to begin reading about cotton early. The Oldham Library has a good collection of books, although many of the most recent additions are on subjects too technical for the beginner. The best local library is that of the Shirley Institute, where approximately 3,000 books are housed. Once begun, you will read on, for not only is the subject interesting in itself, and bristling with problems capable of baffling the best minds of our age, but it is astonishing how the varied aspects of the knowledge entering into it create a fervour even towards the most prosaic studies.

AN OLD BOY.

PRINTING A NEWSPAPER.

There are three distinct processes in printing a newspaper:—Firstly, the setting of the type; secondly, the actual printing of the newspaper; thirdly, the folding and making up ready for delivery.

In a large newspaper works the type is not set by hand but by machinery, namely, the Linotype Composing Machine. This Linotype Machine is a very wonderful machine, consisting of a small furnace, a standard keyboard, and various other contrivances.

It is worked by one operator, and as he receives his copy he proceeds to tap the matter (everything that has to be printed is called matter in a printing works) out on the Keyboard, this being connected by air passages to the furnace, which is full of molten metal. The various other parts, or organs, of the machine come into play and a line of type is cast. Hence the name, lin-o-type.

This is taken to the Proof Reader, who corrects any mistakes, and if everything is correct it is then passed on to another very big furnace called a Stereo Furnace, where a Stereo or a Solid Plate of Type is made. This is then put on the printing machine, which prints, folds and counts in dozens, or twenty-fives, as required for delivery.

E. BARKER, Remove.

THE WIDGET.

I am the Secretary of the Committee for the Registration of Patents. One day my duty called me to inspect an exceedingly strange invention. I was led down a quiet side street to the entrance of a seemingly uninhabited building. Over my head swung a creaking sign bearing the name "Widget." On entering, I was accosted in a careless, indolent manner by a slovenly individual who supported himself by means of the dirty, plasterless wall. His request was for a match to light the scorched clay pipe that dangled between his teeth. I supplied him with the match and joined my companion the inventor. We left the entrance corridor and turned down a narrow passage to the right. Here I supplied another inquirer, who suddenly appeared from a small room, holding an inky pen, with the correct time. Then through such a maze of corridors did the inventor lead me that I began to wonder when we should reach the invention. Moreover, in half-a-dozen different places a different favour was asked of me. At last I saw before me an open door, but that door led into the street! Further, when my companion said most calmly, "You have now seen my invention," I almost collapsed with amazement. But I was glad to be out of the filthy, dull hole and quickly departed. How light my pockets felt! They had reason to be light, for when I dived into them they were completely empty! This proved too much on top of my earlier amazement and I went home raving mad. But now the bird has flown no one knows where, and with him his expert pickpockets. That famous building, the "Widget," now stands empty, though it is renowned as a great money-gathering, unregistered patent.

N. REDFERN.

IDLE THOUGHTS.

In a moment of weakness I agreed to write an article for the School Magazine. Now for the life of me I cannot think of anything to write about. Would the subjects that interest me at present have interested me when I was a school boy? The inward suspicion that anything I write now would have been looked upon by my earlier self as dull, stodgy, prosaic and infinitely boring, causes me great embarrassment.

My recollection of School Magazines is of a compilation contributed as to 75% by those who were good at games, and as to 25% by those who were good at literature. There were no tales of exciting adventure, nothing reminiscent of the romantic scenes which would crowd in on my imagination so that I would forget to leave my train at Oldham Central and be carried on to Oldham Werneth.

Which reminds me, I have often wondered which is the most hideous railway station in Oldham, and I have never been able to decide. Werneth is a dull, melancholy pair of platforms, promontories of, though just separated from, the adjacent brooding tunnel. Central Station has a little more aplomb as though its situation in the middle of the town demanded a brighter and a more benign appearance, but between trains, it is sad; it has the sadness of bereavement. Mumps is more pretentious: in addition to its island platform it has one, if not two, bays. What a jolly, bustling place it would be if there were trains at both platforms as well as in both bays. Perhaps during Wakes Week there are. But then, one's impression of Oldham can hardly be based on what occurs in Wakes Week, can it? On ordinary occasions Mumps Station is enshrouded in a mystical meditation, only infrequently disturbed by the trains which adventure, most delightfully puffing, round and up the curving slope which leads to Royton Junction, or those which slip swiftly and almost surreptitiously towards Manchester, intent on business of the deepest portent. But what of Clegg Street Station! In size the biggest, it leaves me, as you find it, cold. It seems half embowelled in the earth and my chief recollection is of the splash of falling water and the rattle of empty milk cans. Clegg Street has excellent intentions but its earlier associations have completely defeated its ostensible desire to be all that a station can be—calm, dignified and wise.

But there is Glodwick Road. Who would forget Glodwick Road Station?.....I wonder! No pretence about Glodwick Road Station. Here you entrain or detrain—nothing more. Nothing to be ashamed of, nothing of which specially to be proud. A Station, not a spectacle. What would you have, my masters!

O, Stations of Oldham! Scattered through the town like currants in a currant bun, I wonder which is most plain, which most pleasing! Perhaps one day I will visit them all. Make a special journey, observe their features, note their characteristics, and decide. I am sure I ought to. It would set my mind at rest.

.....

That Bell! It must be a train due to arrive. That Bell again! What is it? "Division Bell, Sir. You have been dozing. Third Reading of the Merchandise Marks Act. Hurry, Sir; you will just be in time for the Division."

I have been in the Library of the House of Commons all the time and still my article for the School Magazine remains to be done.

S.S.H.

A HOLIDAY IN SPAIN.

Some time ago, I was in the North of Spain with a few friends, and we enjoyed ourselves very well together. The weather there is glorious, and the numerous sights are worth recording. For instance, the King of Spain's Castle at Sandander, the centuries old Cathedral at Santiago where we saw St. John's supposed relics, are just examples of the places of interest. The scenery is gorgeous and the country abounds in fruit. Figs, peaches, apples, pears, etc., are all grown there. The better vineyards are in the South of Spain, as it is warmer in that part of the country. All the men wear beret caps and blue smocks. Their ways of transport are bullock-carts, an occasional bus, but we hardly saw a horse on the whole holiday. The holiday lasted three weeks or so, and we had about a week in Spain itself. The food in the hotels is not as good as one would imagine. These Spaniards are fond of oil and everything is cooked in oil. The sail is also a great feature and we stayed at La Rochelle, a famous old French town, Corunna, where Sir John Moore is buried, and Santander, and landed in Vigo, which has a magnificent harbour. We enjoyed this holiday very much but it felt very nice to land back in Liverpool.

A. E. TUPMAN.

THE JUNIOR SCHOOL PICNIC.

Last June great excitement was caused in the Junior School when Mr. Parsons made the announcement that he had arranged for a Picnic. Tongues wagged at a great rate during the days between the arrangement and the event. Several boys were "bagging" seats in the charabanc in which we were to go. The front seats were the most popular. It was arranged that we were to go to Marple. At last, the great day arrived. Tongues wagged still faster. Mr. and Mrs. Pickford and Mr. Regan were to go with us, as well as Mr. Parsons. The charabanc set off in fine style amid loud cheers, and with other envious boys looking on from the School gates.

We soon settled down and found the journey very interesting, although nothing exciting happened till we were nearly at Marple. There is a very steep hill commonly known as "The Death Trap," and here we had to get out and walk to the bottom. On the way down the hill there is a shop, and so most of us went in to buy sweets. If Mr. Parsons had accepted all that were offered him, he would have needed nothing more to eat for a week.

We did not board the charabanc again but continued our walk to our destination. At the bottom of the hill we turned to the left, and soon after we left the road and took to the country lanes. We went along for some distance, until, coming to some open fields, some of us went the wrong way. After much excitement, we got together again, and at last, with still more wrong turnings, we arrived at the farm where tea was to be served.

We had brought the cricket tackle with us and some eggs and spoons, but we had left all in the charabanc, so four boys were dispatched to fetch them (much to their disgust!) We were just going in for tea when they came back. There were three tables set out in the tea room; each would hold about ten boys. We had a fine tea; there were ham, tongue and chicken sandwiches, cream and other kinds of cakes.

After tea, we all went out into the field. Some of us played rounders with Mr. Regan, others played cricket with Mr. Parsons whilst Mr. and Mrs. Pickford looked on, and still more stood admiring a goose in the farmyard. When we had finished, the best part came; there were the races. The first was a scratch

race which proved very exciting because of the close finish. Next was a handicap race, in which all boys of ten years and under had three yards start. Then came the egg and spoon race. It was very funny to see the competitors trying to get the eggs on to the spoons. The finish of this race was also very close. Last of all came the three-legged race. This was perhaps the funniest event of all because of the ground being very bumpy. Then came the distribution of prizes. They were boxes of chocolates provided by Mrs. Pickford, who presented them to the winners.

Soon it was time to go home ; much too soon ! Mr. Parsons gathered us all together, and we left by a different lane from that by which we had come.

Eventually, we returned to the charabanc, which by the arrangement of the driver had been installed outside a public house. We took our seats and started off home, but before we had gone half-way it began to rain so hard that the hood had to be put up, which delayed us quarter of an hour. Again we started off and soon got back to school. Just as we got down from the charabanc someone shouted, "Three cheers for Mr. and Mrs. Pickford, Mr. Parsons and Mr. Regan." And we all cheered most heartily for those who had helped to give us a happy afternoon.

HIRST, K., Lower III.

CHRYSANTHEMUMS AT WERNETH PARK.

On Tuesday, November 23rd, the Upper School and the Junior School were enabled, owing to the courtesy of Dame Sarah Lees, to see the really wonderful show of Chrysanthemums in Werneth Park. Some magnificent blooms were on view, some being no less than 11 inches in depth. Another very striking bloom was of a new and very delicate shade of green. Before we left Mr. Mottram, Dame Sarah's head gardener, gave a short but very interesting description of the culture of the Chrysanthemum from the cutting to the full grown bloom, describing the soils in which the plant thrives best, the practice of "taking" the buds and the methods of eliminating various pests. He had to admit, however, that the wonderful plants we had just seen, though grown in Oldham, were not grown in Oldham soil.

FRIED FISH.

Oh, Dagon was the Fish-God to the Philistines of old,
 His temples teemed with Aribute, and his courts were crammed
 with gold,
 The incense on his altar-pans did reek unceasingly
 From Askalon to Ashdod, and from Gaza to the Sea.
 And the maidens of the Philistines did dance in tuneful rout,
 Before the shrines of Dagon, unblushing but devout.
 To him they vowed their promises, and whispered each her wish,
 And they dreaded dour old Dagon, the Deity of Fish.
 Dalilah, for example, must have spent a fearful lot,
 On offerings to Dagon and his fishy frying pot.
 The local clergy backed her up—there is no doubt of that,
 And the priests in Dagon's temples in consequence grew fat,
 In Ekron, in the streets of Gath, the endless temples stood,
 Whose altars reeked of frying fish, and Dagon found it good.
 And day by day, by devious way, came many a man and maid,
 To offer gifts to Dagon—and the clergy found it paid !

The centuries rolled onward and Dagon now is dead,
 No dancing in the temples—we have cabarets instead ;
 Gone are the priests and payments, our savings we must give
 To Income Tax Assessors for allowing us to live !
 But the fish of Dagon's altars— that at least has stayed behind,
 And the Philistines are with us yet, though of another kind.
 They dread no longer Dagon, but they love his favoured dish ;
 Hence the supper-bars of Lancashire are still a-reek with fish.
 Still rises savoury incense at suppers and high-teas
 From Middleton to Glodwick, and from Chadderton to Lees,
 The fumes of Oldham's fish-shops now whet the appetite
 With piscatorial promises of "salmon" (labelled "white").
 And the Philistines of Lancashire, from Mumps to Hollinwood,
 Come nightly to these rituals, and find that it is good.
 Perhaps you may not like it, being dainty in your ways ?
 Well, start a supper-bar yourself, and you will find it pays !

THE GORILLA.

Who roams about in pomp and pride,
Swinging the branches from side to side,
Delighting in the trees to hide ?
The gorilla.

Who always eats enough for four,
Fruit and branches by the score,
Sounding the while his monstrous roar ?
The gorilla.

Who terrifies the hunters bold,
Making their hearts turn stony cold,
The while they hunt his skin for gold ?
The gorilla.

Sometimes aloft a club he wields,
Torn from the wood of the trees he peels,
With this strong blows he often deals,
The gorilla.

Who shows for apes a brother's affection,
Offers in danger his protection,
To enemies rouses his club for inspection ?
The gorilla.

Beats a drum upon his breast,
Thumps upon his hairy chest,
Sleeping when he thinks it best,
The gorilla.

R. B. HOLLOS (Remove).

SCHOOLMASTERS.

(Written after several years intensive study of this
peculiar type).

There is a race of beings in this world, who, unable to mind
their own business, insist upon presenting knowledge in the form
of misty and loquacious vapourings supposed to be capable of

absorption by a child of tender years. This type of man has been variously called dominie, pedagogue and Schoolmaster; less polite labels for this ubiquitous being have been known to exist, but the actual incarnation of the type is known as a "Schoolmaster," and, by virtue of his office, is addressed by the title of "Sir"—to his face. The probability is, that some pupils of the first being of this type, resolved to have their own back on somebody else, and so donned the academic toga. And again, some of their pupils became inspired with the same laudable ambition, and so this untractable type has increased in geometrical progression.

Now let us consider the character of such a man. Have you ever considered that a Schoolmaster and a Chameleon have much in common? The most striking resemblance lies in the adaptability of a master's moods to suit different occasions and environment. Could any parent who sees him smiling with the smile of paternal benevolence and exuding kindness from every pore, even imagine that that same man, before a class of boys, can be a living incarnation of one of the thunderbolts of Jove, and that that same kindness is as rare as sunshine in Oldham? A Schoolmaster has at least two names: there is the orthodox one received at Church and those he received when his future pupils first saw his face and heard his name. Then in general, he has two voices, for surely he does not use the same one at home as he does in school? Even the pedagogue's mental processes have a touch of duplicity: he gilds the bitter pill of the report form by the composition of formulæ calculated to soften the bitter realities of the mental condition of some of his pupils, and, in some cases, cloud his own realistic outlook with an air of romance. Lastly, consider the double life led by a Schoolmaster: if their domestic lives had been like their scholastic ones, they would long since have ceased to exist as a race, or at the very least, the Sunday china would have been irretrievably damaged.

Have you, dear reader, ever witnessed the somnolent scene as when a Master gives a lesson? Boys have brought the art of sleeping with both eyes open to a high pitch of perfection, and they stare at the teacher with open mouths and unhearing ears and convey to the labouring dominie the false impression that he is a second Gemaiel. This illustrates a Schoolmaster's high standard of moral courage; he knows that everybody is asleep

for he himself has often slept under similar circumstances, but yet, the still, small voice of conscience will not allow him to cease disturbing the sultry air with wandering zephyrs of knowledge.

But there is one type of Master for whom one should feel sorry. I refer to the man, who, through no fault of his own, is forced to leave his native land and instil knowledge into the irresponsive hearts of boys, alien to himself, in surroundings which are far removed from the pastoral beauties of the old homestead and generally far less inspiring. For a few years he survives it, generally assisted by such devices as a sprig of shamrock (or is it watercress ?), a leek worn in the button hole, or an accent strongly suggestive of the middle of nowhere ; for a few years he stands the bitter taunts of unsympathetic natives and then, one fine morning when there is not quite so much smoke as usual, he packs his bags and books, and returns to the land of his fathers !

It is surprising with what peculiar diseases Schoolmasters are affected. I have known a Schoolmaster who is stone blind and unable to read a word one has written, detect a boy pricking his neighbour with a pin, at five hundred yards range. More surprising than this even is the case of a Schoolmaster who is stone deaf but yet gives a realistic imitation of Vesuvius in eruption when a boy whispered to his neighbour !

Now I know what you suffer at the hands of these beings ; I know that you regard them as a combination of the qualities which characterise the cave man, the serpent, and the chameleon, but, regard them more in sorrow than in anger. It is wrong to abuse them. Put yourself in their position. How would you like to love everybody and be loved by nobody ; how would you like to give up your spare time from 4-15 p.m. to 5-0 p.m., for the sake of doing somebody good, and because you really care for and cherish that person and to have to employ coercive persuasion to make him appreciate the magnanimity of your offer ; how would you like to give up your whole life to improving the juvenile mind and then everybody think you are doing it to earn a living ? Deep down in the heart of every boy there is an affection for his Schoolmaster, and you will find it if you have patience to dig deep enough ; every boy respects his Schoolmaster and tells him how much he appreciated him—when he has left school.

A. GREENHALGH (Upper VI.)

LETTERS TO THE EDITOR.

St. Catherine's College,
Cambridge,

14-11-26.

Dear Sir,

This term I am living in College; in itself this is a simple statement, but capable of affecting the imagination in various ways; perhaps some picture of a servile "gyp" reverently laying the breakfast rises before you; perchance the vision of a distracted student burning the midnight oil; anon the sounds of dissipated revelry might greet your ears. If so you are deceived; at times, indeed, some blatant gramophone or twanging ukelele breaks forth, but as to using midnight oil—it can't be done as only electricity is provided; and the gyp with a touch of superciliousness may be heard to cast aspersions on the use of a breakfast-cup as a sugar basin.

But enough of these trivialities; I would like to say a few words on a more serious matter, namely, domestic economy. How much sugar is required by two people in one week, assuming that each goes out to tea x times, and there are R . visitors, with appetites varying from 0.2 to 3.1 times that of the Duke of Wellington? [Answers may be sent, but no prizes are offered!]. A difficult question you say? My dear sir, it is as nothing compared to some of the more complicated problems that turn up. At first, indeed, these difficulties seemed insuperable, but, I am pleased to say, my education is improving rapidly; I can already boil two eggs without cracking more than one, and I made some coffee once without letting it boil over!

Still, I ought not to end on a note of pessimism and perhaps discourage some embryo member of this University; all is not eggs and coffee, there is a brighter side to life, which far outweighs occasional culinary mishaps; in any case there is always the chance of stumbling on some wonderful recipe; roast pork itself was discovered by accident.

And, above all, there is no one to tell you to take your feet off the mantlepiece!

Yours sincerely,

W. R. JOSLIN.

The Union Society,
Cambridge.

Dear Sir,

At the end of a month's residence in Cambridge my impressions are still extremely vague and mixed up, as I have not yet had time to sort them out.

Thus, this epistle will probably be a frightful jumble, because I do not know what subject to begin with.

However, as I cannot keep my eyes off my tennis racquet, I'll begin with sport. In this line, one simply does *not* know at first which to choose, because you cannot play soccer, rugby, lacrosse, tennis, hockey, chess or marbles in the same afternoon. A word of warning to prospective undergraduates with respect to marbles. Do *not* indulge in this exciting and fascinating game on the Senate House Steps, or else you will be fined 6/8 which has nearly been my experience. However, I have decided to concentrate on soccer, tennis, swimming and chess, and the others may—(you know the rest).

The weather here is terribly consistent. It either rains "cats and dogs" all day, or else, to put it poetically, the sun shines bright in an azure sky. At any rate, I believe it does, having seen its reflection in shop windows. The "glowing orb" itself, I very rarely see, so narrow are the streets.

I have been trying to invent, as yet unsuccessfully, I fear, a patent "Square" (i.e., a mortar-board, for the benefit of the uninitiated, commonly known at School as the "Hoi Polloi"), which will slip into my waistcoat pocket. By jumping on my own headgear for half-an-hour per day, I find that it will not even enter my overcoat pocket. You perhaps wonder why I should take all this trouble over such an apparently trifling detail! The reason is that anyone leaving his "Square" anywhere does so at his peril, as each separate member of the species is very similar to its fellow, and all undergraduates are not exactly "George Washingtons," if I may use the simile.

I have had a number of thrilling experiences on my bicycle, as everyone does up here. First, it was a mighty leap over the handle-bars as a result of a collision with a member of the other sex; next, it was a ladder swung by a brawny painter that caused my downfall. Still, these are more than compensated by the experience one acquires in the noble art.

And, finally, who dare stop me now from reading P.G. Wodehouse in the daytime?

Yours sincerely, M. GILBERT.

S. Catherine's College,
Cambridge, 14-11-26.

Dear Sir,

The only excuse I can offer for the disconnected character of this letter, is that it had to be written after College Dinner, which all those "in the know" will admit is scarcely conducive to literary inspiration, but rather to a state of somnolence on the nearest settee.

With regard to that which is nearest my heart at the moment (namely, the afore-mentioned dinner), let me say that the charm of the thing lies in the fact that however well the diner may peruse the Menu, even to the extent of looking up the words in a Dictionary or Mrs. Beeton's, he never knows either what he is *going* to have for dinner or what he *has* had. It is true, sir, that at times one may hazard a shrewd guess, as, for instance, that the solid elastic lump on one's plate described as "Cod Americane" is probably chewing gum in a new guise, with sauce composed of the remains of yesterday's vegetables. But there is always an element of uncertainty which gives an added piquancy to the meal.

To change the subject (which I do with reluctance) may I say that the inducements to work here are not very great, and the inducements to have a good time, many. Still, the life of a "Stinks" candidate (like myself) is by no means all ease. I have to spend a good deal of my time footling about the "labs.", so that there is not as much time for recreation as I would like. It has its compensations though, one of them being that the science lectures are generally the most exciting and rowdy. This last week one Professor refused to lecture to us.

The trials of one wearing the "academical dress" are many. To quote one, the flowing robes (as all observant enough at school will probably have noticed) are very apt to catch on any projection, bringing the wearer up with a sharp jerk and a tendency to blaspheme. When it is wet, the water drips from the corner of the "Square" (which the rascally designer of the headgear destined should be situated immediately above the back collar stud) right down one's neck.

Apart from these minor distractions, the life of an Undergrad. is an extremely happy and contented one.

It would be useless to try to enumerate the many pleasures and advantages of University life, but even I, with my very limited experience can recommend anyone to come up and try them.

Yours sincerely, L. SLATER.

Oldham,
November, 1926.

Dear Sir,

Some time ago, I wrote to you with reference to the recently formed "Sprightly Oldham Society," and endeavoured, not—I trust—without some success, to enlist your sympathy and support for a movement whose lofty objects deserve the keenest interest of all ratepayers, all residents, all true local patriots, all municipally-minded men whose hearts beat faster at the music of such words as "Mumps," "Glodwick," and "Bottom-o'th'-Moor."

I now enclose, for your consideration, some cuttings sent to me by my friend Hiram Z. Snoopboomer, of the "Consolidated Culture Corporation, Inc." New Oldham (Wis.), in connection with a recently held "Boost Week" in the local Schools. This festival seems to be a kind of scholastic "Civic Week," and many of the underlying ideas are moving in their eloquent simplicity.

The cuttings are somewhat disjointed, but they lose nothing by that. Their very diversity is, perhaps, their greatest charm.

Yours faithfully,

R. CHIRPS,

The Editor,
The "Oldham Hulmeian."

CUTTING NO. I.

WIRELESS EXHIBITION.

A.—THE "BALLYGOYLE" SIX.

This set is the result of much enterprising research on the part of one of our most persistent and successful oscillators, Mr. Robt. H. M.y.rs. Handsomely finished in a cabinet of bog oak, the wiring system is simple and original. The valves are embedded in a bowl of shamrock, peat being used throughout as the insulating medium. The elasticity of the set is so highly developed that no less than 94 stations can be received on top gear, singly or all at once. By the adjustment of a reflex boffin pin, connected by an eccentric cam shaft to a laminated phlymping ploop, and rotating transversely in the concentric grooves of a self-actuating widget drum, station after station can be easily tuned out. Indeed, every single known wave length can be entirely eliminated. This triumph of selectivity, the complete effacement of all reception, is, perhaps, the most successful feature of a truly remarkably set, and the introduction of the **Load Non-Speaker** will revolutionise the wire-less world.

CUTTING No. 2.

Pamphlet issued by the.....School Wireless Society for the guidance of beginners.

1. THE SET.—The triumph of hope over experience. Many varieties are now on the market, all equally good. For if not, some would be less bad than they might have been, which, as Euclid used to say—is not frightfully reasonable.

2. THE RHEOSTAT.—This ingenious invention regulates the current in such a way that the co-efficient of voltaic incidence varies inversely as the cube root of its atomic weight at sea level. Or, to put it more simply—the higher, the fewer.

3. THE THERMIONIC VALVE.—An electric bulb, remarkable for its tendency to burst. Hence the name. It usually has two brass knobs at the base. One is marked like a Hot Cross bun and the other is not. If you put them in the wrong slots, the valve explodes. This counts one against you. Five points make the game.

4. THE HIGH TENSION ELIMINATOR.—This completely eliminates high tension. Not a trace of it left! Read what Mr. M. . ers says in a recent letter:—

“For years I was a martyr to high tension. I tried one of your eliminators and since then, begorra, all has been lovely in the garden.”

5. REACTION can be most simply defined as that peculiar quality of an electrical charge which is analogous to the possession of monobasic inertia in a potato.

6. THE DAVENTRY COIL.—This charming fiction shows that the wireless world is not lacking in imagination. Originally a phrase invented by Uncle Theodore in “The Children’s Hour,” it has become a part of our daily life. Several enterprising firms have actually placed an article with this attractive title on the market, and for a small sum, one can now purchase a tangible souvenir to perpetuate the happy inspiration of Uncle Theodore’s invention.

7. THE GRID BIAS.—This contrivance performs the functions of an electrostatic liver, and bears the same relation to the standard of amplification as a split infinitive bears to a subsidiary outcrop in the Penine Range.

ABRAHAM B. GRE . . HAL . .
VICTOR T. L . . S.

CUTTING No. 3.

ANNUAL REPORT OF THE.....SCHOOL
METEOROLOGICAL SOCIETY.

Some time ago, members were asked to send in observations of winter thunderstorms. A number of interesting replies were received, especially with reference to a storm on the 20th ult... These replies have now been collated and the following very valuable information is the result . . .

1. Several bursts of thunder were accompanied by a perceptible noise.
2. The wind varied from East to West, via North and South—during the storm.
3. A curious moisture was observed in the atmosphere. It is believed to have been rain.
4. The temperature fluctuated considerably, but the prevailing tendency was anti-clockwise.
5. A piece of blue litmus paper was struck by lightning and instantly turned piebald.
6. The storm itself appears to have been travelling in a direction estimated to be about 180° West of due East, which, considering the Board of Trade returns for last March, is a remarkably high average for the time of year.

CUTTING No. 4.

"SIDE SHOWS."

A Fairy Operetta, by Form U III, entitled:

"SILKEN THREADS."

(Produced by Mr. F. W. C...e).

King Bovo:—R...ishaw.

Master of the Giants:—B...tersby.

The Fairy Queen:—S. Ash...n.

(Solo Dances by Fairy R...buck and Fairy G...t).

(Chorus of Fairies, Prep-monitors and line-book Goblins).

The scene is laid in No. 1 Classroom. It is 9 a.m. and the Register is missing. As the curtain rises, soft music is heard, playing the famous theme "Silken Threads," which forms the central motif throughout the Operetta.

THE BRITISH ARMY OF THE RHINE.

When we think of an Army of Occupation, many ideas may pass through our minds. Perhaps we picture prancing steeds, rattling sabres, troops, armed to the teeth, constantly marching about the town, and cowering inhabitants of the occupied territory slinking away from the sight of anyone in uniform. Such an impression of the British Army of Occupation in Germany is entirely erroneous. The occupation of Rhineland may be called a silent occupation. All ranks carry out their duties without fuss or ostentation and, with certain necessary exceptions, the normal daily life Germans is not interfered with in any way.

Towards the end of 1918 the British occupied Cologne. They remained there until January, 1926, when the occupied area was changed. Wiesbaden is now the centre of the British garrison. Old Rhinelanders will probably tell you that the Cologne days were THE days. As a newcomer to the Rhine Army, I can neither deny nor confirm such an assertion. Perhaps I can give you a few interesting details of Wiesbaden and the life we lead out here.

If you glance at your atlas you will see that Wiesbaden itself is some little distance from the Rhine and lies at the south-west spur of the Taunus. Until 1866 it was the capital of the Duchy of Nassau and has been famous as a watering place since the days of the Romans. Its hot salt springs were known to the Romans as *Aquae Mattiacae*.

Wiesbaden is a mixture of Bath, Cheltenham and Harrogate, without being quite like any of them. It has a population of about 110,000. The main street, *Wilhelmstrasse*, with its shady avenue of lime trees, is the principal thoroughfare and contains many fine shops, hotels and a large museum. Standing back some little distance from *Wilhelmstrasse* is the principal building, the *Kurhaus*. This extremely fine structure was opened in May, 1907, and contains a large Concert Hall, a smaller Lecture Hall, Reading Rooms, Card Rooms, Drawing Rooms, and a splendid Restaurant. Behind the *Kurhaus* are extensive grounds in

which, in the summer, a band of highly-skilled musicians performs daily. In the winter the concerts take place in the Kurhaus itself.

There is a good service of electric trams in Wiesbaden. The vehicles differ from those to which we are accustomed in England. There are usually two, and sometimes three cars coupled together. Smoking is forbidden in the front car but is permitted in the second or third. Passengers may stand on any of the platforms, including that of the driver. I have had experience of tramcars in many parts of the world, but have never met this custom outside Wiesbaden. On wet days, when the trams are well patronised, it is not uncommon to see four or five people crowding the driver's platform. Under such conditions it is surprising that he can carry out his duties efficiently.

In some respects housing conditions differ very much from those at home. There is a far greater use of electricity out here, and most houses have electric light. Central heating, too, is the common method of warming all buildings. In older buildings, however, huge stoves are employed. These are far from economical; but coal is plentiful and not dear. The household furniture is inclined to be massive and not so pleasing as our own. It is, nevertheless, substantial and serviceable.

The traffic in Wiesbaden is extensive and ranges from old-fashioned carts to expensive and luxurious motor cars. The rule of the road, as in most Continental towns, is "keep to the right." The control by the police, though good, is not up to the standard found in large English towns. Accidents are fairly common, and at times the directions given by the police are not as clear as one could desire.

The Headquarters of the British Army of the Rhine are in Wiesbaden itself, and many of the troops are stationed there. Other troops, however, are accommodated in surrounding places such as Bingen (30 miles away), Biebrich, Schierstein, Idstein, Königstein and Langenschwalbach. The barracks are those which were normally occupied by German troops, and their present names, given by the first British Units to occupy them, are interesting. Thus the

Worcestershire Regiment, ever famous for that wonderful stand at Gheluvelt in the Great War, occupies Gheluvelt Barracks. The Royal Regiment of Artillery, ever mindful of "dear old Bobs," is situated in Roberts Barracks. Similarly, Cambrai Barracks accommodates the Royal Tank Corps.

The social life of the garrison is much the same as it would be at home or in a station abroad. Sport there is in plenty for all ranks. At present Association Football is in full swing, and the different Regiments and Corps compete in a military league. Rugger, of course, is not neglected, and some very fine and exciting games take place. Hockey, a favourite Army sport, is most popular out here. Last season's Army Champions, the King's Shropshire Light Infantry, are the leading team in Rhineland. Other units, however, are always ready to challenge their supremacy, and the general standard of hockey is very good.

Officers have the use of a very good eighteen hole golf course, and have facilities for Squash and Badminton in addition to the games just mentioned. In summer they have as much tennis and cricket as they can desire. Other ranks, too, have facilities for these two games.

Dances, whist drives and concerts are frequent in the winter months, and are enjoyed by all ranks. Some of these events, such as the Armistice Ball, given each year by the Garrison Sergeants' Mess, will always remain as a pleasant memory in the minds of those who have been fortunate enough to attend. There is no need to be dull out here.

Perhaps a final word about the mail service will not be out of place. Our mails are dealt with entirely by the Army Postal Department, and are not touched by the Germans at all. The rates are three-halfpence for the first ounce and a penny for each additional ounce or part. We buy British postage stamps at the different branches of the Army Post Office out here. In writing to any of your friends stationed in the Rhine Army, you should address the envelope thus: 14358 Pte. T. Jones, 2nd Bn. Blankshire Regiment, British Army of the Rhine. Subject to the weight mentioned above, the letter will cost three-halfpence and will be safely delivered to him within about 48 hours. Do not add,

Wiesbaden, Germany, to the address, otherwise the letter will be treated at the London G.P.O. as a foreign letter, will be handled over here by the German postal authorities, and the recipient will have to pay a charge of twopence—this being double the deficiency on the ordinary foreign letter rate of twopence-halfpenny. Perhaps some of you have friends out here. If so, it may be well to remind you that letters from home are always welcome. I have served in many parts of the world, and have never failed to look forward to mail day. Even out here, where every day, including Sunday, is mail day, we all look forward to receiving letters from relatives and friends. I am making no personal appeal, as I have always been fairly well treated in the matter of correspondence. There are, however, many of all ranks in this station who appear to be forgotten. Perhaps my gentle hint may have the desired effect if any of you feel guilty.