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*“THE wealth of the
land comes from the
forge and the smith and
the mine,*

*From hammer and
chisel and wheel and
band,*

*And the thinking brain
and the skilful hand.”*

DR. WALTER SMITH.

ENGINEERING OPPORTUNITIES

BEING THE
GENERAL PROSPECTUS
OF
THE BRITISH INSTITUTE OF
ENGINEERING TECHNOLOGY
LTD.

SHAKESPEARE HOUSE,
29—31, OXFORD STREET, LONDON, W.1
(FORMERLY OF LEICESTER SQUARE)

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"Now I have laid all my cards on the table. I feel that my experience and work have been wasted. I am absolutely nauseated at the prospect of remaining in the 'hammer and file brigade' for the rest of my life. Can the B.I.E.T. offer me help? If so, on what lines."

This is just an extract from a letter originally sent by a student. Yes, the B.I.E.T. can offer real help to the man who wishes to get on to a better plane—the object of this book is to show you how.

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will be of particular
interest to you.

¶ This book has been written mainly by the founder of the B.I.E.T. It is a plain statement of the help we offer. It is entirely unadorned by the wit of the publicity expert, and the observing reader will appreciate the frank man-to-man tone adopted throughout.

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Supported by many lecturers of leading Polytechnics* and Technical Colleges, authors of well known technical works and members of prominent Engineering Societies.

FOREWORD

BY

PROFESSOR A. M. LOW.

• D.Sc., A.C.G.I., M.I.A.E., etc.

(The celebrated inventor and Engineering Consultant.)

Engineering should be considered of highest rank among the professions. No engineer need apologise for his calling. He should feel the greatest pride in it, for it may be said that it is the very heart and soul of material progress.

Engineering is certainly the foremost industry in this country ; it yearly accounts for the expenditure of many millions of pounds, and is so vast in its activities that probably more than one third of the useful man power of Great Britain is occupied by engineering work or in its many ramifications. Each year increases the scope and vital importance of the industry, and offers increasing opportunity to the ambitious engineer.

The superiority of British Engineering is still unchallenged, but with the wonderful opportunities which constantly present themselves it is astonishing to find how many men engaged in the lesser paid engineering posts have the impression that they cannot escape from the thralldom of the category " skilled workman," or other time-paid occupation.

Nothing more completely erroneous could possibly be imagined.

In the course of my consulting and research duties I am very often in contact with some of our largest engineering employers, and it is made overwhelmingly evident to me that if only those men in their shops and on their drawing boards would but decide to study ahead of their work, their opportunities and earning power would be magnified out of all proportion to the time and expenditure necessary for securing the vital qualification of technical knowledge.

I cannot believe that it is merely a lack of ambition which prevents such men from making a determined effort to leave the hard

trodden paths of labour. I know full well that every man has his storehouse of ambition, and that it is only the lack of proper guidance and sympathetic encouragement which holds him, metaphorically, to the grindstone.

The British Institute of Engineering Technology has been inaugurated with the sole purpose of helping the ambitious engineer to make progress.

The courses have been prepared to give practical men the technical knowledge which is essential before they can hope to leave the environment of the bench and workshop.

Benefit from the lessons and training of the Institute is received at the very beginning, for the student is taught to progress from first principles, if necessary, in a systematically interesting manner which gives him a thorough grasp of the technical side of his work.

The help given by the Institute is not restricted to students of any particular age or educational attainments, for each course is so prepared as to be adapted to the individual requirements of any student.

It is unnecessary that I should enlarge upon the varied details of the methods employed or upon the benefits which the student receives, for these are explained in detail elsewhere in this book. I would mention, however, that it is the aim of the B.I.E.T. to prepare every student ultimately for an engineering examination of recognised standing.

The general courses of instruction have been designed with this end in view, and constitute ideal stepping-stones to the more advanced examination courses.

In all too many instances tuition by correspondence has been undertaken with an entire lack of sympathy and consideration for the student; but it is my considered opinion that the methods employed by the British Institute of Engineering Technology are in advance of any similar services offered to engineers.

I am certain that with ordinary intelligence and a reasonable mixture of ambition and determination it is an easy matter for those who are engaged upon any branch of engineering work materially to improve their lot and increase their earning capacity.

Throughout the association of the student with the B.I.E.T. he receives individual attention and assistance; as his studies proceed he is made to see clearly the goal he has in sight, and how a well paid engineering appointment will result.

The student is not made to study unwanted material which has no definite value in the engineering employment market. He is given the essentials of important training in an interesting manner, and as quickly as is compatible with efficiency. The Tutors of the Institute are practical enthusiasts, ready and willing to give special attention and advice to students who may encounter difficulties connected with their studies or work.

It is the foremost object of the B.I.E.T. that definite help and sound guidance shall be given to each and every student.

The average engineer to-day has been content to follow in the wake of technically trained men, and has never followed his own impulses towards achievement by home study. Opportunities cannot be stored in pigeon holes. Practical knowledge alone is of little use unless it is accompanied by an understanding of the basic principles underlying the operation.

The British Institute of Engineering Technology can definitely help towards the obtaining of a better post for every student, and can bring within his reach the opportunities for advancement, which alone are obtained by technical training.

I consider that the work of The British Institute of Engineering Technology commands the greatest respect. I unreservedly recommend the Institute to all who wish to prepare for an Engineering Examination or one of the higher paid Engineering appointments.

THE ROAD TO PROMOTION.

(Addressed specially to the man in "The Hammer and File Brigade.")

This morning you will be going into the workshop, to the bench, on the lathe; fitting, turning, erecting, repairing. You are an engineer! Perhaps you are less fortunate and are about to start the day by scanning the situations vacant columns for a job.

It is to you—to every mechanic, electrician, draughtsman, in fact to every man in the engineering profession, no matter how humble or how important his position, that we want to talk, seriously and in a common sense and practical way.

The vast majority of men who enter the engineering world serve their apprenticeships and learn their trade in the same way as thousands have done before them, and when they have finished they find that, after all, they are merely one of a vast group who all have just the same knowledge and experience, and it comes to them that the most they can expect to earn is a living wage.

When thousands of men are all engaged in work of the same nature, and when they keep to this work, year in year out, they view life from the same standpoint, and amidst the clatter and clang of the workshop their mental vision becomes dull or distorted, and they fail to see any escape from their surroundings and from the monotony of the daily grind.

How many times have you not chatted with a man at the next bench about the monotony of the average mechanic's job. Your pay envelope never alters—never shows an increase.

Where is it all leading to? Leaving aside the somewhat forlorn hope that you *may* one day find a job where real money can be earned, you know in your own heart that the future is by no means an entrancing prospect.

Now, we state emphatically, and with a full knowledge of the position in the engineering world to-day, that we can positively put you on the path to a brighter future, quickly and without undue effort on your part. We have no illusions about our statement, and can give you undeniable proof of what we say. For the moment we want to emphasise, with all the emphasis at our command, that the engineering profession does hold unusual possibilities of highly remunerative employment.

At present you are in a "blind alley" job—in a rut, and we know full well that you view it as almost a superhuman task to get out of the rut; but it can be done; we must hammer this point home to you—that you can get out of the rut. The question is, **HOW?**

First of all, let us ask you a question. Are you fit to take over and hold a responsible engineering post? Clear your mind of all previous ideas and conceptions. Think of the knowledge and abilities that a post of responsibility demands. Now frankly, do you feel that you know sufficient about the inner side of things to take over a big job? If you do, *then have you proof of these abilities*, proof that is recognised and will convince a hard-headed employer? You cannot answer "yes" to both of these questions or you would not be in the "hammer and file brigade."

In all our experience we have never yet met a man who held a recognised engineering qualification such as the A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., A.M.I.A.E., etc., or some similar proof of a thorough technical training, who was unable to obtain a really good post.

Pick up any good engineering trade paper and you will find that employers are asking for men with recognised technical qualifications. While such a demand exists, surely it is up to you to supply this demand.

If the head of a large engineering concern came to you to-day and offered you a well paid progressive post; a post where you would not be paid so much per hour, but where you would receive a good salary; a post that was guaranteed for life with no fear of unemployment; if, we say, such a post was guaranteed, if you would but arrange to study certain essential subjects for a short while, would you accept the offer? It would seem, perhaps, a little too good to be true, but this is in effect exactly what our service means to you.

It is an accepted fact that no man can hold a responsible engineering post without possessing a thorough technical knowledge of his work. Yet it is surprising the number of men who rail against fate because they have received so much practical experience, and still remain "*one of the crowd.*" It is frankly absurd for a man to expect an employer to have sufficient confidence to appoint him to a post of responsibility with good pay, simply on the fact that his testimonials show he is a good workman. But if, being a good workman, he can also prove that he understands the scientific side of his particular work, is in fact so interested in his work that he has devoted some of his spare time to study under the guidance of a responsible Technical Body, then the position is reversed. Put yourself in the place of an employer, and our argument will be readily apparent.

Study the men who are going to the top of the engineering ladder to-day. With hardly one exception it is the man who has studied the technical or inner side of his work who takes over the post of responsibility, where real money is earned.

The architect, not the bricklayer; the designer, not the driver; the man who can use his head rather than his hands—this is the man who goes to the top. •

The man who can read a drawing and can lay out work for others is worth more to the employer than one only capable of watching the operation of the machine. The man who can prepare a drawing is of more value than one who can only read a drawing. The man who can design a machine is of greater value in the employment market than the man who is a skilled draughtsman only. The man who can supervise the design of machinery from the economic standpoint commands a larger salary than the designer, and so on.

It will be observed that as the engineer possesses a more extensive or specialised knowledge, so does his earning capacity increase. Moreover, and this is a most important point, we find that competition for the high salaried posts is very small indeed. An employer can find a hundred men to take a mechanic's job at £3 per week, where he finds it difficult to find *one* man with the necessary knowledge to hold a £1,000 a year appointment. Any large engineering employer will unhesitatingly bear out our statements.

In the foregoing pages we have gone to some length to show you, in a logical manner, that your immediate goal must be a recognised technical status. Many men will read this book with the simple object of investigating our system of tuition. These men are already on the right road, for they have come to the knowledge that a recognised technical qualification is an "open sesame" to a responsible post in the engineering world to-day. Our remarks are not intended for such men, except perhaps to harden their decision—they are offered to those men who are still groping, trying to find a way to better things.

Our cumulative experience is probably greater than that of any similar body of men existent, and from this experience we say very sincerely that, with a recognised technical status, your worthwhileness in the eyes of engineering employers will be increased to an unbelievable extent, and that a good position with less hours, less uncertainty, and more pay must inevitably result.

There always has been, always will be, a demand for qualified engineers. The demand is there. **You** can supply this demand—if you will. It is the object of this book to show you *how*.

OUR SYSTEM OF TUITION.

We teach solely by correspondence. Correspondence tuition is now endorsed by leading educational authorities, and even University Principals. It is undoubtedly the 20th century method of education.

When a student enrolls with us we supply him with text-books by recognised authorities, books which are recognised the world over as being the best standard works. In conjunction with these books we send the student the first one or two lessons. These lessons take the place of the Tutor. They direct the student as to which part of the text books to study, and proceed to explain the "whys and wherefores" of everything in the book.

Whilst our text-books are the finest available our lessons constitute the real course, the text-books being merely vehicles through which we teach. Our lessons have been designed to speak to the student in exactly the same way as the Tutor would do standing by his side. The lessons explain and elucidate every sentence or phrase in the text-book which might appear in the least difficult. If we feel that further examples or illustrations should be given we supply them in our lessons. If a certain point should be enlarged upon we enlarge upon it in the lesson. Indeed, so simply and clearly are these lessons written, and so suitably are they graded, that even the most backward student cannot help but make sure and rapid progress.

Our lessons and written lectures have been prepared by experts who are qualified in every way, in that they are thoroughly practical and technical men and have had years of experience of teaching by correspondence.

The most important part of our system is this. In all our lessons our expert tutors have incorporated the ideas, conceptions or view points of every other authority of note. In short, the student has in the lessons we provide the essence of a complete technical library, gathered and prepared in a form which can be clearly understood by every student.

Do you see the value of these lessons? Do you see how the essence of the finest brains are utilised to give you a thorough knowledge of each of the subjects you are studying under our guidance? Consider for a moment and you will see that here you have a perfect system of technical education—specialised tuition in each subject; individual instruction in your own time, and freedom from that self-consciousness which is the cause of so many failures under the Class Room System.

When our lessons are prepared they are checked and criticised by specialists and are revised again and again. Thus they come to you written in crisp, clear language, exuding the painstaking efforts of many experts who, owing to the continual revision of the lessons before publication, have given of their best in each case.

Our lessons are clarity itself. We go to unending pains to make everything as simple and clear as possible. Should, however, the student encounter any difficulty, or should any point arise which he cannot quite understand, then he is encouraged to write to his Tutors, who are always only too willing to explain any doubtful points and give the student their personal help until he has thoroughly mastered the lesson he is studying. Every query raised by the student is dealt with *courteously and considerately*. We would like to emphasise that we do everything in our power to make each student feel that he is our **only** student.

Test Papers.

At the end of each lesson a number of questions are set, based on the subject matter of the lesson, which the student must answer and post to us for correction and advice. These answers are then thoroughly examined, corrected and criticised by our Technical Staff, who point out all mistakes and weaknesses and freely advise the student as to how these weaknesses may be overcome. The corrected lesson is then returned to the student, and at the same time, to make doubly sure that every part of the lesson has been thoroughly digested, we enclose a set of Model Answers, showing how an expert would have answered the questions. With this corrected homework is enclosed a fresh lesson, and in this way the student quickly progresses with his studies.

All of our courses can commence from very first principles, if necessary, or at any other stage suitable to the student's knowledge, so that every student is certain to make regular progress under our guidance. In fact, we guarantee to coach each student successfully until he is entitled to the Diploma of this Institute.

Elsewhere in this book our Technical Director has shown many other ways in which we help the student in his technical education.

CORRESPONDENCE versus ORAL TUITION.

Who are the best judges of the value of **Correspondence Tuition**? Surely students who have had extensive experience of Correspondence and other systems of Instruction. Recently thirty students who had studied Technical subjects by Correspondence Tuition and by the Class Room System, were asked to give their candid opinion on the relative merits of Correspondence Instruction and Oral Tuition. Their opinions were not biassed in any way—it was emphasised that their *impartial opinions only* were required.

Of the thirty who were approached, it is interesting to find that thirty stated most *definitely that Correspondence Tuition had innumerable advantages over Class Room Tuition*—and this is the judgment of men who have studied under both systems, 100 per cent. in favour of our System! Striking testimony indeed.

The advantages of the System we adopt are many and varied. The following are some of the reasons given by the students referred to above, showing the superiority of Correspondence over Oral Tuition.

Complete Mastery of Every Principle.

Our student can tackle the problems in his own time. He can sit and master a problem thoroughly and fix his mind entirely upon it until it is solved. He can then go over it again and again until he has a complete grip of the subject, whereas by Oral Instruction a student is apt to miss a certain point; whilst he is pondering it part of the lecture is missed, confusion arises, and the student must trust to guess work. Guess work does not enter into our System.

A student is much more likely to listen to a Teacher absent-mindedly than he is to study a written lesson without thinking about it. Our written lessons focus his attention.

The Correspondence student tries to puzzle out the minor difficulties for himself, and generally succeeds. Not only does this make him think deeply, but he grips his lesson much more thoroughly than if a brief answer were given to his difficulty by word of mouth.

At evening classes, if a student has not understood certain points of any lesson, the Teacher cannot turn back to that lesson at the next lecture as he must work to a certain curriculum. Thus the student carries forward his difficulty and failure results. Our student thoroughly masters each principle before passing on to the next.

In evening classes it is not possible for the lecturer to be asked to explain each student's every difficulty during the short time available for the lecture. The result is that one difficulty quickly increases to many, hopeless confusion arises, and many students do not finish their Courses. Our system has entirely overcome this drawback.

Individual Instruction and Perfect Continuity of Study.

The average student is not always able to concentrate on a difficult problem, owing to outside difficulties and troubles which react upon the mind. Thus with Oral Tuition, unless the student is always fit and ready to absorb the facts, the lecture falls on empty ears, the preoccupied mind being unable to memorise. This does not apply under our system, as the student can lay aside his study till the mind and brain can absorb the facts. Thus nothing is lost, and there is no need to flog the brain.

At evening classes the teacher must cover a certain ground in a certain time. At the end of a lecture some students have grasped the principles involved, and some have not. The next lecture commences where the other finished, although many students are still pondering over unsolved difficulties connected with the previous lesson, and so on, until in time it is a waste of time attending the class. Teachers must follow with their sequence of lessons, so that a backward student is left very much to himself. Our system does away with all these difficulties.

Our Courses can commence from fundamentals or from any stage suitable to the student's knowledge. They are thus adapted to the needs both of men of limited education and technical graduates.

A particular subject will be easily understood by one student and prove difficult to another; in a subsequent lesson the reverse may be the case. In a class room, no provision is made for this contingency, whilst our students have the benefit of individual instruction and attention.

Convenience and Saving of Time.

Our student can choose his own place and time for study. If illness or overtime detains him he does not get left behind as he would if attending College or Night School.

Our system allows the student to take advantage of any available chance for study, without having to wait for class nights as in Oral

Tuition. Our students can make any odd hour profitable. This is particularly exemplified by the fact that the Oral student is barred from attending lectures during the week end, the "rest" period during which the student is in the best condition for study.

Here is an important way in which the Correspondence student scores over his less fortunate Oral Brothers. Instead of donning his overcoat on a wet wintry night and sallying forth for a quarter of an hour's tramp or ride to a chilly school room, he draws his table a little nearer the fire and commences his work in comfort. The time which would be taken to reach the school and subsequently to return, say, in all an hour, is spent in profitable comfortable study. An hour per night, four nights per week, mean perhaps more than two hundred clear hours of study saved in a year.

Individual Rate of Progress.

Our student covers the Course in his own time, quickly when it is easy, slower and more carefully when it is more difficult. Progress is therefore smooth and continuous and not at the pace of either the fastest or slowest student in a class. Moreover, the continuity of our student's progress is not destroyed during the holiday and vacation seasons.

The most obvious advantage of our System is that which allows each student to work at his own pace irrespective of his fellows. Teachers do not lecture to meet the convenience or capacity of the individual student. They work to a set syllabus, which must be covered in a set time. Thus the more brilliant pupils must chaff at the slow progress, while the less talented, pushed ahead too hurriedly, are not able to grasp the subject, and, like men befogged, the further they go the more confused and mystified they become. It is obvious that no such difficulty confronts our Student who works at his leisure and sets a pace to suit his own capabilities.

Relative Cost.

By attending evening classes for a year or two it has been estimated that the student pays two or three times as much as the student pays for a Course under our guidance, which is far more comprehensive and of far greater pecuniary value. By the time a student has paid his fares, lost time in travelling, paid tuition fees, bought his books and outfit, he finds it a very expensive matter to attend evening classes, and moreover a continuing expense. Our fees are quite inclusive, and our student knows from the outset exactly what his technical education is going to cost.

By spreading our fees over a long period we bring to all the opportunity of studying under eminently capable masters. To study under such men at an Oral College would mean a heavier fee payable in one sum in advance.

The Value of Written Lessons.

Written explanations are always with a student and can be studied repeatedly. Oral explanations cannot. Our student can refer right back to lesson one if he wishes. An Oral student can only glean the required information from hastily scribbled notes. The instruction, comments and explanations, when written, are more precise and comprehensive than Oral remarks, and if not at first understood can be re-read and in case of lapse of memory can be referred to at will.

Our Books, lessons and Model Answers have become the student's own property, and form permanent records for future reference.

Under our system you are being constantly examined so that we (and you) know what progress you are making. This is not the case in Technical schools, where, when an examination is held, it is necessary to wait months for the result.

Written examinations enable the instructor to detect weak points immediately and to give the student special help in these subjects.

Privacy.

In a class room many students are reluctant to stand up and ask questions, and as a result a whole term might be wasted through a difficulty being carried forward from lecture to lecture. Under our system students can seek our advice on any point, however trivial or important, sure of a considerate reply. Complete privacy is maintained.

Many men, especially those in responsible positions, do not wish it to be public knowledge that they are studying, and naturally have a great objection to studying at classes, possibly side by side with Juniors in their department. Under our system complete privacy is maintained; all our lessons, correspondence, etc., are sent under plain wrapper.

The above are just a few of the special advantages of Correspondence Tuition. Many other advantages will at once spring to the readers mind.

AN INTERESTING REPORT

The following is an extract taken from an issue of the "Birmingham Post":—

"At the conference of the Association of Special Libraries, Mr. H. Rottenburg (*Cambridge University Engineering Laboratory*) said some lecturers, when asked to give a course of lectures, felt they had to fill in the time with long readings from text-books, and not with guidance as to where the students could find the materials of study. His experience was that when students left the lecture-room with voluminous notes they knew nothing at all about the lecture they had attended.

"Sir Richard Gregory, who presided, said that he himself whole-heartedly agreed that students should be encouraged to go direct to the sources. This method had been practised with great success by the late Sanderson, of Oundle.

"Students would be far better sitting in their rooms reading quietly over a pipe than attending lectures which consisted merely of long recitations from text-books.

"The result was that some of the students simply came into the lecture-room to sign the register, and then escaped immediately and did their work for examination purposes under an outside authority at home, people who specialised in that sort of thing."

We quote the above to show the trend of thought of eminent authorities and to bear out our statements. Correspondence tuition is now admitted as the twentieth century method of education. But, we claim to have gone further, by *perfecting* correspondence tuition.

OUR EMPLOYMENT DEPARTMENT.

(Authorised and Licensed by the London County Council.)

Throughout this book we have endeavoured to show as clearly as possible it is the aim of this Institute to give really practical help to every Engineer who has the wish and the will to get ahead of his fellows.

Nobody realises better than the Principals of this Institute that Technical Education, however simple and interesting we have made it, is only a means to an end, and that end is a better appointment, security from unemployment, better pay, less hours, and more interesting work.

Technical Education means all these things, but to enable our students to market their abilities quickly, we have inaugurated a special employment department—call it Opportunity Department if you will—whose sole duty it is to find progressive posts for our students.

However much an Engineer may be fitted for a good post, however much an Employer may require a man of his abilities, little good is done unless Employer and Employee are put in touch. It is the object of our Employment Department to make “contact” between student and employer.

We, the British Institute of Engineering Technology, claim that we have organised an Employment Department far more efficient than any before. Our Employment Superintendent served for a number of years as Manager to probably the best known employment department in Great Britain. During his experience he has had many thousands of Engineering Vacancies pass through his hands, has seen many appointments secured, and many more lost. From his many years experience there has now arisen an organisation where *efficiency* is the keynote of everything; where there is little show, but sound practical help in abundance.

How our Scheme Works.

When a student joins this Institute, if he requires help in finding a post he fills up that section of the Enrolment Form dealing with Employment, whereon he gives us full details of his training, age, experience, etc., and the type of post he wishes to obtain. These particulars are methodically recorded in our Appointments Register under “A” the various posts he can undertake and “B” under the appointments he will be capable of accepting as he proceeds with his studies.

Our Register has separate sections and each and every type of engineering appointment, such as Works Manager, Maintenance En

gineer, Boiler Inspector, Transport Manager, Mechanical Draughtsman, Jig and Tool Draughtsman, General Electrician, Auto Electrician, Motor Mechanic, Fitter, Turner, Tool Room Man, and the hundreds of other sub-divisions in the engineering profession.

The following is a typical entry in our Appointments Register and will illustrate our System :—

Note.

In the column headed "Code" the letter "A" or "B" appears. "A" signifies that students are fitted for the post of Assistant Production Engineer, and "B" signifies that this is the type of post for which the student is studying. In the case of Brown, he was not fitted for a Production Engineer's post when he joined us, but *under our guidance has become qualified*. His code has therefore been altered from "B" to "A." It should be noted that our Employment Superintendent and Tutorial Director work in close co-operation, so that as the student makes progress and becomes fitted for better positions, our Tutorial Director issues the necessary advice, and the fact is recorded in the Appointments Register, so that his increased abilities may be marketed.

ASSISTANT PRODUCTION ENGINEER								
NAME	ADDRESS	STUDENT NUMBER	DISTRICT ACCEPTED	MIN SALARY	AGE	EXPERIENCE	MARRIED OR SINGLE	CODE
L. Brown	20, Ocean Rd Westgate	1,024	England	£4 0 0	24	Slight	Single	A
R. Robinson	43 Elm St Blackpool	1,173	London or Scotland	£4 0 0	24	Good	Single	A
T. Smith	4, Beaford Rd Sunbury	1,271	England or abroad	£4 10 0	27	Good	Single	A
S. Jones	1, Abbey Way Ealing	1,392	London	£5 0 0	37	Nil (Good Family)	Married	B
L. Singh	Princess St. Rangoon	1,400	India or East	200 Rs. per annum	23	Nil	Single	B

Now, note the rapidity in which we act. An Employer telephones—he wants an Assistant to the Production Engineer. Applicants must be over 24, with good experience and training, and used to responsibility. Salary about £4 10s. per week to commence. •

We at once refer to our Register under *Assistant Production Engineer*. Mr. Brown, Mr. Robinson, and Mr. Smith are suitable. We at once write to these three students, advising them of the qualifications required, the salary to ask, and what points to emphasise in their application. We also enclose a written introduction to the Employer.

At the same time *we write to the Employer*, saying that he may expect to hear from Messrs. Brown, Robinson, and Smith immediately, and that we recommend them strongly for his appointment. Accordingly, without any loss of time, the Employer is in direct touch with two or three men who are just suited to his particular requirements. He can be in touch with our men far more quickly than if he had advertised in the public press, and the result is that another "*Post Secured*" is added to our ever increasing list.

Preferential Treatment of our Students.

The advantages our students enjoy in the matter of employment are many and varied. When a student sends an application to an employer to whom we have introduced him his application is only one of three or four, not one of hundreds as is the case if you apply to an advertisement in any of the national public papers. Our Employment Department operates only in the interests of our students, so that your application will not really be going before a strange employer who is scanning hundreds of letters to find the best men at the best price. Moreover, the employer has faith in our judgment or he would not have asked us to fill his vacancy for him. If, therefore, we put your name before the employer with our recommendation you may be assured that it will at least be thoroughly considered. We wonder how many of the applications you have made in response to vacancies in the situations vacant columns have been *read*, let alone seriously considered. When once you have the ear of the employer, half the battle is over. Our students have influence behind every application they make through our Employment Department.

We repeat again that our service is the result of our long experience in dealing with engineering employers throughout the country, plus exceptionally efficient organisation. Our methods are very clear, and much more efficient, by far, than any employment methods previously in operation.

Why do Employers Advise us of their Vacancies?

The reason is that we are of considerable use to Employer's. Consider the advantages of our Service to a busy employer. He knows :—

- (1) That our applicants are obviously thoroughly interested in their work, and are not of the "clock watcher" type.
- (2) That they are of a better standard than the average who apply to vacancies appearing in the press.
- (3) That we have an intimate knowledge of our students abilities, and that our recommendation accordingly commands consideration.

- (4) That we save him the time and trouble of going through hundreds of mostly useless applications.
- (5) That those we recommend are at least worth interviewing.
- (6) That at a moment's notice we can put him in touch with efficient, ambitious men, without any expense on his part whatsoever.

Consider the above advantages to the employer. Is it any wonder that more and more employers look to us when they require engineers for progressive appointments?

EMERGENCY EMPLOYMENT SERVICE.

It often happens, as a result of present industrial conditions, that certain students require help very urgently. Our Employment organisation is sufficiently elastic to allow for such contingencies. Where we are satisfied that a student is justified in receiving preferential help we place such student on our Emergency Appointments Register. Students on this Register receive first consideration by our Employment Superintendent when selecting suitable applicants, providing always that everything else is equal. For instance, if a fitter was required and several of our students were suitable, those in the Emergency Appointments Register would have the first opportunity of applying for the post.

We want to make it very clear that only students who are out of employment, or are in very ill-paid positions, are placed on the Emergency Register. Such students must write to our Employment Superintendent stating their reasons for requiring special Employment help. If their applications are granted, then they are placed on the Emergency Register for a period of four weeks, when they must renew their application giving reasons why they still require preferential help. These restrictions are made to prevent any abuse of a service that has been arranged solely for the benefit of any student who should find himself out of a position.

It should also be clearly understood that our Emergency Employment Service only operates to find "*bread and butter*" positions. Where the better class of Engineering vacancy is concerned *all* students are treated impartially, and those on the Emergency Register rank equally with those of the regular Appointments Register.

Apart from the direct methods of securing posts for our students explained above, our employment department assists our students in many other ways. Our Employment Superintendent personally explains these matters in his chat on page 67 ■

ABOUT WEEKLY EMPLOYMENT BULLETINS.

The secret of success in securing engineering vacancies is "Immediate Action." There is no gainsaying this fact. This is the sole reason why we do not issue a weekly employment bulletin. On the face of it the Employment Bulletin Method is very attractive, but a few moments thought shows the hopeless inefficiency of the system.

Strangely enough the Employment Bulletin System is still adopted by some Institutes. The System has for many years operated in the following manner:—

A circular letter is sent to employers who are advertising vacancies in the press, asking if the same vacancy may be inserted in the College Employment Bulletin. If the employer agrees the advertisement is inserted in the Weekly Bulletin under a Box Number. This Bulletin is sent to students each week, generally on Friday. If the student wishes to apply for one of the vacancies advertised he first writes to the College (quoting the Box Number), who in due course send him the address of the employer, to whom he must make formal application. Now it must be remembered that in most cases the vacancies have already been advertised in the press, and accordingly by the time the employer hears from the student of the College who issuing the Employment Bulletin, at least seven days have gone by, in most cases more. What chance has the student of being engaged? Generally none, for the post has been filled before he has had a chance of applying.

Where a vacancy is received early in the week and the Bulletin is not issued until Friday, as much as twelve days must elapse before the employer can be hearing from the student.

Think of the tedious process. The Employer advertises in the press, the College writes to the Employer, the Employer replies to the College, the College inserts the vacancy in their Bulletin, the Bulletin is sent to the Student, the Student replies to the College, the College sends the Employer's address to the Student, and at last the Student can apply for a vacancy which was advertised in the Public Press days ago, and has probably been filled.

The whole system is hopeless. We know from experience that it is a very rare occurrence for a student to secure a post by the Weekly Employment Bulletin System. We, with others, feel strongly on the whole matter, and may be pardoned for doing so.

TECHNICAL EDUCATION.

Much has been said and written on the crying need for Technical Education throughout the country, but whilst Employers are continually bemoaning the fact that their employees will not study the scientific side of their work, they perhaps lose sight of the fact that in many cases their employees *have* attempted to study ahead of their jobs by attending local Technical Classes, but for some reason or other have discontinued their studies. We believe that the fault does not lie so much with the lack of ambition on the part of the man in the shops as with the system, and generally discouraging atmosphere, of many Technical evening classes.

Hundreds of men have written to the Principals of this Institute saying how hopeless it has been to study in a classroom where individual help is really non-existent, and where the academic atmosphere is generally stifling to the majority of the students.

It is encouragement, it is individual help and sympathy, that is needed if the student is to surmount the difficult places. We pledge ourselves to give this help, and as a result, we are rapidly developing into the greatest Engineering Institute existing to-day.

Technical education is to the mind what practical experience is to the hand. The mind reasons, and Technical Training teaches the mind to reason correctly along certain proved paths. It bestows upon the student a knowledge of everything worth while that the experience of centuries has taught us.

Technical education opens up a new world to the Engineer. It lifts him from the crowd of "skilled" men and places him on an entirely new plane. It offers to the ambitious Engineer escape from drudgery and dependence on others, and enables him to win a large measure of success in life, where before he could hope for nothing more than a workman's existence.

Technical Training trains a man to plan and direct. In the place of a mere machine responsive only to the orders of others, we find a man able to think for himself—able to direct and supervise, to plan and instruct, confident in his knowledge and ability.

This is the age of brains. Technical knowledge is always in demand, always commanding a high price. The progress of civilisation is dependent on the Technically trained man; the call for such men becomes ever more persistent. The demand is there—what are you going to do about it?

OUR COURSES.

We realise that the primary object with which a student enrolls for a course of instruction is, either to obtain knowledge which he can employ immediately in his every-day work, and which will enable him to secure a more remunerative and congenial post than he now holds, or to pass a certain qualifying examination.

It is important to remember that our courses are divided into two main branches viz :—

1. Examination Courses.
2. Non-Examination, or General Courses.

Our Examination Courses have been compiled with the specific object of covering the actual requirements of recognised engineering examinations, and may be termed “coaching courses.”

Our Non-Examination Courses have been designed for the student who does not wish to study immediately for any particular examination, but desires a comprehensive course of technical instruction in certain subjects.

It should be clearly understood that our Examination and Non-Examination courses are quite separate. For instance, our Mechanical Engineering course is quite different from our A.M.I.Mech.E. course, our Electrical Engineering course is quite different from our A.M.I.E.E. examination course, and so on. In other words, our Examination Courses have been specially prepared by examination authorities to cover precisely the actual requirements of Professional Engineering Examinations. This is a unique and important feature of our courses.

We do not choose a few subjects from general courses from which to compile a course to cover a certain examination, as is generally the case. Our Examination Courses include numerous questions and examples taken from the latest examination papers. Here is a secret of our success.

It should be borne in mind that our Non-Examination Courses are so constituted that they form an ideal stepping stone to the Examination Courses, so that a student completing such a course can re-enrol for an Examination Course and continue his studies with-

out any break in their continuity. Please remember, however, that the Examination courses are quite complete in themselves and it is not necessary to take up a Non-Examination course before enrolling for an Examination Course.

Our courses can commence from very first principles and assume no previous training or experience on the part of the student. If, however, the student has had some previous training he should state on his enrolment form just to which stage he has studied and our Director of Studies will send lessons accordingly, so that time will not be wasted in recovering old ground.

We guarantee successful tuition to each and every student.

If an Examination Course is taken we guarantee to coach the student until he has passed the actual examination. Irrespective of the number of attempts he may have to make no extra fee is charged. If he should fail at his first attempt we guarantee to coach him for any number of further attempts, free of all charge. Having completed his course, however, the student should have no difficulty in passing at his first sitting.

The Diploma of Membership of this Institute (M.I.E.T.) is awarded on completing an Examination Course.

Where a Non-Examination Course is taken we guarantee to coach the student until he has completed his studies successfully and is entitled to the Diploma of Associate Membership of this Institute. With the award of our Diploma the student automatically becomes an Associate Member of the British Institute of Engineering Technology, which entitles him to use the abbreviated title A.M.I.E.T. after his name.

The fees quoted for our courses, including everything—text-books, lessons, Model Answers, instructions, drawing instruments, unlimited tuition etc. The student is not called upon to make any further payments whatsoever, which again is a unique feature.

ABRIDGED SYLLABUSES OF NON-EXAMINATION COURSES.

(A detailed Syllabus of any Course will be sent on request).

On the successful completion of any one of the following courses the student is awarded the Diploma of Associate Membership of this Institute (A. M. I. E. T.)

GENERAL MECHANICAL ENGINEERING COURSE.

The most important feature of this course is its elasticity. It has been carefully planned to embrace every class of worker in the Mechanical Engineering Industry. The course includes sections in every main branch of Mechanical Engineering, and the student may make his own choice of subjects from Section "B" which will dovetail into his particular requirements. The student may take Section "A" of the course and two or more subjects from Section "B." The Engineer who wishes to acquire a good knowledge of all branches is strongly advised to enrol for the complete course, for which a very attractive fee is quoted. The course consists of :—

SECTION " A. "

PRACTICAL MATHEMATICS. Only such lessons in this subject written in a simple and attractive manner are given as are absolutely essential for a thorough and intelligent study of the subjects for which the student enrolls. This short preliminary series of lessons deals with *Arithmetic, Algebra, Mensuration of Areas and Solids, Simple Equations, Logarithms, Trigonometry, etc.*

APPLIED MECHANICS. Matter, Force, Weight, Triangle and Polygon of Forces, Structures, Moments, Centre of Gravity, Stress, Strain, Elasticity, Tension, Compression, Shear, Beams, Riveted Joints, Shafts, Springs, Work, Mechanical Advantage, Velocity Ratio, Energy, Power, Machines and Mechanism, Friction, Velocity and Acceleration, Kinetic Energy, Horse-power, Transmission of Motion and Power, Dynamometers, Flywheels, Momentum, Centrifugal Force and Pumps, Governors, Hydraulics, Materials, etc

SECTION " B. "

Optional Subjects.

(1) **HEAT AND HEAT ENGINES.** Heat—Thermometry—Expansion—Transmission of Heat—Properties of Steam—Steam Tables and Uses—Combustion* and Fuels—Historical Development—Boilers and Fittings—The Steam Engine—Details—Efficiency and Performance—Motion of Piston and Crank—Flywheel and Governor—The Slide Valve—Steam Turbines—Condensing Engine—Internal Combustion Engines—Otto and Diesel Cycle—Ignition—Gas Engines—Oil Engines—Performance, etc.

(2) **MACHINE CONSTRUCTION, DRAWING AND DESIGN.** Plane Geometry, Principles of Projection—Riveted Joints—Screw Threads—Nuts and Bolts—Joints and Connections—Keys—Pipes and Joints—Shafting and Couplings—Bearings—Roller and Ball Bearings—Pulleys—Crank and Crankshafts—Eccentrics—Connecting Rods—Crossheads—Locomotive Details—Pistons—Engine Cylinders—Valve Gear—Stop Valve—Safety Valve—Steam Engine, Connolite—Boiler Details, Pump Details—Gas Engine—Petrol Engine Details—Miscellaneous Details—Lathe Details—Chuck—Governor—Gear Wheels, etc.

(3) **MACHINE TOOLS AND WORKSHOP PRACTICE.** Measurements and Measuring Machines and Tools—Gauges and Gauge Systems—Workshop Tools—Bench Work—Fittings—Materials—Heat Treatment—Soldering, Brazing, etc.—Lathes—Tool Holders—Lathe Tools, Speeds and Feeds—Lathe Accessories—Turning—Screws and Screw Cutters—Turret and Capstan Lathes and Tools—Plain and Universal Milling—Gears and Gear Cutting—Gear Hobbing and Planing Machines—Boring and Slotting Machines—Planing, Shaping and Drilling—Grinding—Forging—Transmission of Power

(4) **FITTING AND ERECTING.** Tools—Chisels, Hammers, Files, Scrapers—Screwing Tackle—Keys, Cotters and Pins—Case-Hardening—Screws, Bolts and Nuts—Measurement—Templates and Jigs—Materials—Lining Out—Chipping, Filing, and Drifting—Adjustments—Gears, Shafting, Belts and Ropes—Joints and Packing—Slinging and Lifting—Repairs—Fitting and Erecting Shops—Tables.

(5) **ENGINEERING INSPECTION.** Objects of Inspection—Receipt and Storage of Material—Material Tests and Specifications—Inspection of Raw Materials—Inspection of Partly-Finished Material—Inspection of Finished Material—Gauges and Measuring Instruments—Machine Shop Inspection—Fitting and Erecting Shop Inspection—Final Tests—Repairs, Rectifications and Obsolete Parts—The Human Element—Tables.

(6) **COMMERCIAL ENGINEERING AND WORKS MANAGEMENT.** Division of Costs—Labour—Direct and Indirect Costs—Materials—Specification of Materials—Tests—Wages Systems and Rates—Shop Organisation and Management—Time Fixing—Speeds—Analysis of Various Tools and Operations—Hand Operations—Inspection of Work—Classes of Fit—Establishment Changes, Various Systems—Reserve, Maintenance and Depreciation—Selling Expense—Railway Rates—Shipment—Cost-keeping—Labour Costs—Time Cards—Material Costs—Books—Examples of Costing System—Foundry Costs—Estimating—Specification, etc.

(7) **IRONFOUNDING.** Principles—Sands and their Preparation—Iron—Melting and Testing—Cupolas, Blasts and Ladles—The Shops and their Equipment—Moulding Boxes and Tools—Shrinkage, Curbing, Fractures, Faults—Green Sand Moulding—Examples—Dry Sand Moulding—Cores—Loam Work—Machine Moulding—Machines—Machine Moulded Gears—Economics—Weights of Castings, etc.

(8) **PATTERN-MAKING.** Pattern-makers and Pattern-making—Some methods—Lumber—Varnish—Miscellaneous Materials—Bench and its Attachments—Hand Tools—Bench Work—Machine Tools for Pattern-Making—The Band-saw—The Circular-saw—The Lathe—Fillets—Stave Work—Cant or Segment Work—Patterns for Belt Pulleys—Patterns for Cable Pulleys—Making Patterns for Chain Wheels—Patterns for Steam Cylinders—One way of Making a Cross-head—Making Gear Patterns—Propeller Wheels—Patterns for Screws—Traction Wheels for Farm Engines—Globe Valve Patterns—Projection—Metal Patterns—Common Practice—Stripping Plate Job—A Vibrator Plate Pattern—The Evolution of the Globe Valve Core Box—Multiple Core Boxes—Cost of Patterns—The Marking and Record Patterns—Pattern Accounts, etc.

Minimum Fee for this course, including all Section "A" and any two subjects from Section "B," £8 10s. 0d., payable in instalments of 20s. on enrolment and 10s. per month, or £7 10s. 0d, cash.

Any additional subjects from Section "B" may be taken, when £2 10s. 0d. for each additional subject will be added to the fee if paid in instalments, or £2 5s. 0d. for each extra subject if paid cash.

**Fee for Complete Mechanical Course (10 subjects)
£14 10s. Cash, or £16 payable in instalments.**

NOTE:—Our Diploma (A.M.I.E.T.) will be awarded to the student completing Section "A" and any TWO subjects from Section "B."

MACHINE CONSTRUCTION, DRAWING AND DESIGN COURSE.

This is an ideal Course for the Draughtsman or for the man who wishes to enter one of the higher branches of the engineering profession via the Drawing Office. In addition to text-books, lessons, etc., the student receives a complete set of *Blue Print Working Drawings*, which are invaluable for future reference purposes.

The Course is in two sections, "A" dealing with **fundamental subjects and General Principles and Mechanical Details**, and section "B" consisting of two specialised sections. Students take section "A," and choose their desired specialised subject from section "B." (All subjects may be taken at an attractive fee as shown below.)

SECTION "A."

PRACTICAL MATHEMATICS. Sufficient lessons in this subject are given to enable the student to make a successful study of subsequent sections of the Course, and to perform any calculations necessary in the Drawing Office. The lessons are essentially of the practical type, avoiding as far as possible difficult proofs and matter of purely academic interest. The main headings are *Arithmetic, Algebra, Mensuration of areas and solids, Simple and Simultaneous Equations, Logarithms, Trigonometry, etc.*

APPLIED MECHANICS. Matter, Force, Weight, Triangle and Polygon of Forces, Structures, Moments, Centre of Gravity, Stress, Strain, Elasticity, Tension, Compression, Shear, Beams, Riveted Joints, Shafts, Springs, Work, Mechanical Advantage, Velocity Ratio, Energy, Power, Machines and Mechanism, Friction, Velocity and Acceleration, Kinetic Energy, Horse-Power, Momentum, Centrifugal Force and Pumps, Governors, Hydraulics, Materials, etc.

GENERAL PRINCIPLES AND MECHANICAL DETAILS. Plane Geometry, Principles of Projection, Rivets and Riveted Works, Screw Threads, Bolts, Nuts, etc., Pipe Joints, Shafting, Couplings and Keys, Bearings, Pulleys, Engine Details, Cranks, Connecting Rods, Eccentric Crossheads, Pistons, etc., Cylinder and Valve Gear, Boiler Details, Horizontal Steam Engine Details, Pumps, Gas Engine Details, Petrol Engine Details, Lathe Details, Gearing, Miscellaneous Details.

SECTION "B."

(1) **MACHINE TOOLS.** Complete working drawings and designs of a Drilling Machine, Planing Machine, Shaping Machine, Slotting Machine, Boring and Turning Mill, Horizontal Milling Machine, Pneumatic Chipping Hammer, Worm Gears and Double Helical Gears.

(2) **ENGINE AND PUMP DETAILS.** Joy's Valve-Gear, Locomotive Details, Safety Valve, etc., Centrifugal Pump and Engine, Edward's Air Pump, Condenser, Hydraulic Lift, Deep Well Pump, Metallic Packings, Duplex Steam Pump, Locomotive Link Motion, Injector and Elevator, Hydraulic Pressure Pump, Screw Propelling, Turbine Pump, Corliss Valve Gear, "Siriu" Pump, High-Speed Engine, Hydraulic Pump, Shaft Governor etc.

Minimum fee for Course, including Section A, and either Part (1) or Part (2) of Section B, £8 10s. 0d., payable in instalments, 0 20s. on enrolment and 10s. per month or £7 10s. 6d. cash.

**Fee for complete Course, including all subjects,
£10 10s. by instalments, as above or £9 10s. cash.**

COMMERCIAL ENGINEERING AND WORKS

MANAGEMENT.

This course has been completed for the man who wishes to fill an administrative, or executive position in an engineering works. It provides the turner, fitter, tool-room man, draughtsman, rate fixer, progress clerk, etc., with that additional general information so difficult to acquire in the everyday routine of his work. The course is divided into three main headings, Workshop Organisation, Management and Methods of Production, Factory Lay-out, Planning and Progress and Costing Organisation.

ELEMENTARY PRACTICAL MATHEMATICS.

The course commences with a series of attractively written lessons in this subject. Only such lessons are given as are considered absolutely essential for a clear understanding and intelligent study of the various branches of Commercial Engineering. The Mathematics lessons deal with *Arithmetic, Elementary Algebra, Logarithms, Mensuration of Areas and Solids, Stocks and Shares, Simple and Compound Interest, etc.*, and will, of course, not be given to the student who has already a knowledge of these subjects.

COSTING ORGANISATION AND WORKS MANAGEMENT.

Elements of Cost, Selling and Factory Costs, on Cost Expense, Material Direct and Indirect Costs, Specifications, Stores, Records, Labour—direct and indirect, Wages, Systems, Day Work, Contract, Piece Work, Differential and Premium Bonus Schemes, Weir and Rowan and other schemes, Efficiency Schemes, Motion and Tiring Study, Overhead Expenses, Departmental Rates, Machine Hour Method, Machine Rates, Oncost Allocation, Annual and Quarterly Expenses and Allocation, the Typical Factory, Accuracy, Time Recording Devices, Stocks, Managements Requirements, Factory Organisation, Function Organisation, Service Department, General Office, Planning and Progress Departments, Drawing Office, Inspection, Plant, Engineer's Office, Research and Experimental Work, Welfare Department, Tool Room, Foremen, "Scientific Management," Standardisation, Records, Equipments, Working of Costing System in typical factory, Administrative Records, Source of Information, Output and Efficiency, Estimating, Enquiry and Specification, New Products, Final Price, Relation between Profit, Selling Price and Output, One-man and small establishments, etc., etc.

FACTORY LAY-OUT, PLANNING AND PROGRESS.

Planning and Routing, Shop Lay-out, Allotment of Duties, Production Systems, Progress Work, Machining Department, Reports Statements, etc.

Fee for complete Course £5 10s. payable cash on enrolment or £6, 10s. payable 20s. on enrolment and 10s. per month.

GENERAL ELECTRICAL ENGINEERING COURSE.

This is a most comprehensive course, dealing with every branch of Electrical Engineering. The course is divided into ten sections, each section dealing with the theory and practice of a separate phase of Electrical Engineering, a separate text-book being used for each section. The text-books themselves form a most useful and valuable reference library. In addition to a vast store of valuable practical information, they contain an abundance of *especially drawn illustrations, and wiring and circuit diagrams.*

The course is so compiled that the student with little or no previous knowledge of Electrical Engineering, is led progressively from one phase of the subject to the other, in such a way that he easily grasps, not only the simple fundamental facts, but also the more complex problems encountered in Electrical Engineering. A study of the following brief syllabus will convince you of the comprehensive nature of our course.

PRACTICAL MATHEMATICS. The course commences with a series of attractively written lessons in this subject. Both the text-books and lessons employed are essentially of a practical nature, avoiding, as far as possible, anything in the nature of difficult proofs and matter of a purely academic nature. This preliminary series of lessons is covered by the following main headings:—

Arithmetic, Algebra, Logarithms, Mensuration of Areas and Solids, Metric System, Elementary Trigonometry.

PART I. MAGNETISM AND ELECTRICITY AND FIRST PRINCIPLES.

Kinds of Electricity, Static Electricity, Primary Cells, Conductors and Insulators, Resistances and Conductivity, Electrical and Mechanical Energy, Effects of the Current, Magnetism, Electromagnetic Induction, Induction Coils, The Dynamo, Basic Principles, Current Commutation, Classes of Dynamo, Field Magnets, The Armature Windings, The Commutator, Brushes and Brush Gear, Armature.

PART II. INSTALLATION AND OPERATION OF DYNAMOS AND MOTORS, INSTRUMENTS AND TESTING.

Motors, Installation, Apparatus, ~~Calorimeters~~ Testing, Apparatus, Measuring Instruments, Operation and Faults of Dynamos, Armature Troubles, Care of Commutators and Brushes, Operation of Motors.

PART III. WIRING AND DISTRIBUTION, STORAGE BATTERIES.

Distribution Systems, Wires and Wire Calculations, Inside and Outside Wiring, Underground Wiring, Wiring of Buildings, Flash Signs, Lightning Protection, Storage Battery Systems.

PART IV. ALTERNATING CURRENT WORK.

Alternating Currents and Diagrams, Power Factor, Alternators and their Construction, etc.

PART V. A.C. MOTORS, TRANSFORMERS, CONVERTERS, AND RECTIFIERS.

Types of A.C. Motors, Principles and Types of Transformers, Converters and Rectifiers, A.C. Systems, etc.

PART VI. A.C. SWITCHBOARDS, CIRCUIT BREAKERS, MEASURING INSTRUMENTS.

Auxiliary Apparatus, Switching Devices, Regulating Devices, Synchronous Condenser, Indicating Devices, Wave Form Measurement, Switchboards

PART VII. A.C. WIRING, POWER STATIONS, TELEPHONY.

A.C. Wiring, Power Stations and Managements, Hydro-Electric Plant, Station Testing, Telephone Systems and Operation.

PART VIII. TELEGRAPHY, BELLS, LIGHTING.

The Telegraph, Various Systems, Transmitters, Electric Bells, Types and Installation, Electric Lighting, Lamps, Wiring and Calculations.

PART IX. ELECTRIC RAILWAYS, AUTOMOBILES AND IGNITION.

Railway Power Systems, A.C. and D.C. Distribution, Gas Engine Ignition, High and Low Tension Systems, Applications, Electrical Equipment of Motor-Cars, Electric Vehicles.

PART X. PRACTICAL APPLICATIONS.

Electric Elevators, Cranes, Pumps and Compressors, Heating, Soldering and Brazing, Welding, Electrolysis, Electro-Plating.

Students wishing to take only certain sections should write for our advice and special terms.

Fee for complete course £9 10s, payable cash on enrolment, or £10 10s., payable 20s. on enrolment and 10s. per month

NOTE :—Twelve excellent Text-Books are included in our Electrical Engineering Course.

ELECTRICAL INSTALLATIONS COURSE.

This course has been prepared as a result of frequent demands from *Electrical Engineers, Wiremen, Contractors*, etc., who wish to combine a practical knowledge of Electrical Wiring, etc., with a technical knowledge of principles and theory of Motor and Dynamo Circuits, and all subjects in any way allied to Electrical Installation Work. The course includes numerous *Illustrations, Descriptions, Wiring Diagrams, Worked Examples* and an abundance of *Practical Hints*. The brief syllabus of subjects is as follows :—

PRACTICAL MATHEMATICS.

A short series of attractively-written lessons in this subject is given, if necessary. Only such matter is given as is absolutely essential for a clear understanding and intelligent study of the various branches of the course, and to enable the student to perform readily circuit and other calculations. The mathematics lessons deal with *Arithmetic, Elementary Algebra, including Simple Equations and Logarithms, Mensuration of Areas and Solids, and Elementary Trigonometry.*

MAGNETISM AND ELECTRICITY.

A short series of lessons in this subject is given, just sufficient to enable the student to make an intelligent and successful study of the various branches of Electrical Installation work.

ELECTRICAL INSTALLATIONS AND WIRING.

Electric Circuit Theory and Calculations, Filament Lamps, Arc Lamps, Distribution of Power, Direct Current Supply, Two- and Three-Wire Systems, Boosters, Balances, Alternate Current Supply, Instruments, Ammeters, Voltmeters, Shunts, Wattmeters, Galvanometers, etc., Fuses, Cut-outs, Switches, Systems of Wiring, Joints, Soldering, etc., Insulators and Cables, Batteries and Bells, Testing for Faults in Cables, Motor Circuits, D.C. and A.C. Transformers, Dynamos, D.C. and A.C. Systems of Distribution, Miscellaneous Wiring, etc.

Fee for the complete Course is £5 10s. payable cash on enrolment or £6 10s, payable 20s. on enrolment and 10s per month.

POWER HOUSE DESIGN COURSE.

This is the course for the *Maintenance Engineer, Power House Attendant, Shift Supervisor, Draughtsman*, etc. It deals with every phase of Power House Design and Operation, and discusses fully every combination of Electrical, Mechanical, and Hydro-Electrical Plant. Descriptions of the largest and most up-to-date installations throughout the world are given, with copious illustrations, drawings, and calculations.

PRELIMINARY.

The course commences with short preliminary series of lessons in **Practical Mathematics, Applied Mechanics, and Electricity and Magnetism**. Only sufficient lessons in these subjects are given to enable the student to make an intelligent and successful study of the various branches of Power House Design.

POWER HOUSE DESIGN AND OPERATION.

Systems, Choice of Site and Type of Plant, Water Supply, Foundations, Buildings, Specifications, Ventilation, Cranes, Chimneys, etc.

Steam Raising Plant, Choice of Type, Types of Boilers, Oil and Gas Fired Boilers, Auxiliaries, etc., Steam and Feed Pipe Systems, etc.

Steam Engines and Turbo-Generators, Turbines, Condensers.

Gas Engines and Gas Producers, Oil Engines, Diesel Engines, Type and Considerations, Generators, Motors, Boosters and Transformers, Practical Notes, Switchgear and Switchboards, Large and Small Power Houses and Sub-stations, Power Factors, Modern Installations, Data and Statistics, Maintenance and other Costs, Hydro-Electric Power Houses, Selection of Sites, Measurement of Water Flow, Civil Engineering Works, Water Turbines, Modern Examples, Electricity Regulations.

Fee for complete Course £7 10s., payable cash on enrolment or £8 10s. payable 20s. on enrolment and 10s. per month.

ELECTRIC TRACTION COURSE.

This course has been planned to meet the demand for a course in Railway Electrical Engineering by engineers who already have a good knowledge of general electrical engineering and of generation, transmission and transformation. It is the course for the specialist, and deals with the fundamental principles of Electric Traction, with apparatus and devices and with convenient methods of making calculations required in practical working.

The course is a most exhaustive one and is particularly helpful to candidates for the A.M.I.E.E. examination in Electric Traction, the syllabus of which it covers.

The brief syllabus of the course is as follows :—

PRACTICAL MATHEMATICS.

The course commences with a series of lessons in Practical Mathematics, if necessary. The lessons commence at any stage desired, and include **Algebra, Logarithms, Mensuration, Co-ordinate Geometry, Trigonometry, Differential and Integral Calculus**, etc.

MAGNETISM AND ELECTRICITY.

Where necessary a series of lessons in this subject is given. The main headings of the Magnetism and Electricity course is as follows :—Magnetism, Molecular Theory, Magnetic Fields, Magnetic Properties of Materials, Induction, Hysteresis, Electric Current, Potential Difference, Resistance, Ohm's Law, Electrical Circuits, Instruments, Cells and Batteries, Electric Charges, Conductors, Influence Machines, Electro-Magnetics, Dynamos and Motors, Alternators, etc., etc.

ELECTRIC TRACTION.

Mechanics of Train Motion, Series-parallel Control, Control Systems, Rheostat Calculations Direct Current Traction Motors, Shunt and Series Motors, Commutating Poles, Field Control, Current Collection, Over-head Conductor Systems, Suspension, Conductor Rail Systems, Single, phase railways, Contactors, Three-phase and Split-phase Railways, Regeneration, Over-head Trolley Lines, Polyphase Motors, Cascade Connection, Brakes, Governors, etc., Various types and Principles, Train Resistance, Methods of Calculation, D.C. Motor Performance and Rating, Comparison of Electric Traction Systems, Complete Calculations for an Electric Train, etc., etc.

Fee for complete course £5 10s. payable cash on enrolment, or £6 10s. payable 20s. on enrolment and 10s. per month.

PRACTICAL TELEPHONY COURSE.

This is a most complete and practical course, dealing with every branch of the subject, *INCLUDING AUTOMATIC TELEPHONY*. Whilst this course is not written to cover the syllabus of any particular examination, nevertheless it covers the ground of most of the examinations in Telephony, including the *City and Guilds of London Institute*.

The course commences with a series of lessons in **Practical Mathematics** and in **Electricity and Magnetism**, followed by a complete course in Telephony. A brief syllabus of the subjects covered by Telephony section is as follows:—

TELEPHONY.

General Definitions, Batteries, History, Receivers, Transmitters, Sub-Station Apparatus, Sub-Station Instrument Connections, Switches and Extension Working, Inter-communication Telephones, Switchboard Apparatus, Relay and Lamp Signalling, Private Branch Exchanges, Magneto Exchange Systems, C.B. Working, C.B. Multiple Switchboards, Junction Line, Part-Line and Trunk Line Working, C.B. Exchange, The Power Plant, Special Exchanges, Aerial Lines, Underground Lines, Line Loading, Multiplex Telephony, Submarine Cables, Faults and their Localisation, Tests and Measurements, Testing Equipments, Telephonic Repeaters, Wireless Telephony, Automatic Exchanges, Miscellaneous Applications.

Fee for complete Course £5 10s., payable cash on enrolment, or £6 10s. payable 20s. on enrolment and 10s. per month.

TELEGRAPHY COURSE.

This is a most up-to-date and detailed course, compiled primarily for the practical telephone worker. Every phase of the subject is dealt with in a most exhaustive manner. Our course covers the requirements of the *Post Office Examinations and the City and Guilds of London Examinations in Telegraphy*:—

The Course commences with a series of lessons in **Practical Mathematics and Magnetism and Electricity**, followed by a course in **Telegraphy** of which the following is an *abbreviated* syllabus.

Primary Cells—Circuit Calculations—Conductors—Resistance Coils—Galvanometers—Battery Testing—Wheatstone Bridge—Megger and Bridge Megger—Single Current Systems and Relays—Double Current Sounder—Differential Duplex—Quadruplex—Wheatstone Automatic System—Bridge Duplex—Wheatstone A.B.C. Stelzes Recorder and Rebses Telegraph—The Hughes, Bandot, Murray Automatic and Multiple Systems—C.B. Battery and Switching Systems—Secondary Cells—Universal Battery—Working—Repeaters—Test Box—Protective Devices—Telegraph Testing—Special Circuits—Aerial Lines—Underground Lines—Weak Current Telegraphy—The Amplifying Valve.

Fee for complete Course £5 10s., payable cash on enrolment or £6 10s. payable 20s. on enrolment and 10s. per month.

WIRELESS TELEGRAPHY AND TELEPHONY.

The object of this course is to give complete instruction in the general principles and practice of Wireless Telegraphy and Telephony. Whilst our course is quite up-to-date, including the very latest practice, it nevertheless gives information regarding old types of installation which are still in use, especially in ships. The course is invaluable to sea-going operators and candidates for the P.M.G. Certificates. *It also covers the syllabus of the examinations of the City and Guilds of London Institute in this subject.*

The following is an abbreviated syllabus :—

PART 1.

Electricity and Magnetism—Primary Cells—Accumulators—Current Electricity—Inductance and Capacity—Electro-magnets—Dynamo, Motor, Rotary Converter—The Transformer—Direct and Alternating Currents—Condensers—Electro-Magnetic Waves—The Oscillatory Circuit—Spark Transmitting Circuit—Poulson Arc, etc.

PART 2.

Receiving Circuits—Receiving Valves—Amplifiers, Thermionic Effects and Uses of Three-Electrode Valve—Radio Telephony—Directional Reception, etc.

PART 3.

Transmitting Valves and Circuits— $\frac{1}{2}$ k.w. Sets, Plain and Rotary Discharger Types— $1\frac{1}{2}$ k.w. Quench Gap Transmitter— $1\frac{1}{2}$ k.w. Continuous Wave Transmitters—Valve Amplifiers—Directional Transmission—Direction Finding—Aerials—Emergency Apparatus—Spark Sets—Wavemeters—Care and Maintenance of Installations, etc.

PART 4.

Properties of High Frequency Alternating Current—Production of Electrical Oscillations and Radiation of Electrical Energy—Transmission of damped Waves—Transmission of Continuous Waves by Arcs and High Frequency Alternators—Detection of High Frequency Oscillations by Crystals—Receiving Circuit—Thermionic Valves—Application of Thermionic Valves to Radio Reception—Generation of High Frequency Oscillations by Thermionic Valves—Radio Telephony—Three-electrode Valve Receiving Circuits—Faithful reproduction in Radio Telephony—Directional Reception—Short-wave Transmission and Reception—Propagation of Waves through Space—Nature and Origin of Atmospherics.

Fee for complete Course £5 10s., payable cash on enrolment or £6 10s. payable 20s. on enrolment and 10s. per month.

WIRELESS AND HIGH FREQUENCY ENGINEERING COURSE (ADVANCED).

This Course has been designed for the man who has already acquired a good knowledge of the principles and practice of Wireless and wishes thoroughly to study the more advanced phases of the subject. The Course proceeds to a high standard and is invaluable to those holding, or wishing to hold, posts as Designers, Research workers, and other technical and administrative appointments. The Course will be found most useful to students studying for the Wireless and High Frequency Section of the A.M.I.E.E., B.Sc. and other advanced Wireless Examinations.

The brief syllabus of the Course is as follows :—

PRACTICAL MATHEMATICS. Sufficient Mathematics is given to enable the student to make an intelligent and successful study of the higher branches of Wireless and High Frequency Engineering. The lessons include *Algebra, Logarithms, Mensuration, Equations, Co-ordinate Geometry, Trigonometry, Differential and Integral Calculus, Differential Equations.*

ELECTRO-TECHNOLOGY. The Magnetic Circuit—Electromotive Force—Construction of Direct Current Machines—Armature Reaction and Commutation in D.C. Generators—Characteristics of D.C. Generators—The Direct Current Motor—Operation of D.C. Generators in Series and in Parallel—Electrolysis—Secondary Cells—Primary Cells—Alternating Current Circuits—The Single Phase Transformer—The Single Phase Alternator—The Single Phase Synchronous Motor—Polyphase Currents—Voltage Regulation and Parallel Operation of Alternators—Rotating Magnetic Fields—The Induction Motor—Converting Machinery—Complex Wave Forms—Electrical Oscillations—Electrical Measuring Instruments

WIRELESS AND HIGH FREQUENCY

WIRELESS AND HIGH FREQUENCY ENGINEERING.

WAVE MOTION AND WIRELESS.

Wave Motion—Frequency, Wave Length and Velocity—Amplitude and Intensity—The Electro-Magnetic Spectrum.

HIGH FREQUENCY ALTERNATING CURRENTS AND OSCILLATORY CIRCUITS.

The Production of Wireless Radiation—High Frequency Alternating Currents—The Oscillation Circuit—Free and Forced Oscillations—Resonant and Tuning.

WIRELESS CIRCUITS AND AERIALS FOR TRANSMISSION AND RECEPTION.

Wireless Circuit Components—The Wave Meter—Decrement and Selectivity—Aerials and Radiating Systems.

SPECIAL CIRCUITS.

Rejector and Acceptor Circuits—Coupled Circuits—Circuits for Duplex and Dual Operations.

THE THEORY OF THE WIRELESS VALVE.

Conduction through Gases—The Electron Emission from Hot Bodies—The Two-electrode Valve—The Action of Auxiliary Electrodes—Hard and Soft Three-Electrode Valve Characteristics—Valve Design and Manufacture—The Four-electrode Valve Characteristics.

SPARK, ARC AND ALTERNATOR METHODS FOR THE GENERATION OF HIGH FREQUENCY ALTERNATING CURRENTS.

Spark Methods—Arc Methods—Alternator Methods.

THE THREE-ELECTRODE VALVE OSCILLATOR.

Conditions for Continuous Oscillation—Oscillatory Valve Service—Current Limitations—Efficiency of Valve Oscillators—Practical Considerations—Transmitted Circuits.

THE ELECTRO-MAGNETIC THEORY, AND THE PROPAGATION OF WIRELESS WAVES.

The Electro-Magnetic Field—Maxwell's Equations—Particular Cases—Defraction of Electro-Magnetic Waves—Application—Practical Measurement—Atmospherics.

THE DETECTION OF HIGH FREQUENCY ALTERNATING CURRENTS.

Rectification—Theoretical Considerations—The Detection Constant—Rectifying Devices—Beat Reception—Tikker Reception.

AMPLIFICATION OF OSCILLATORY CURRENTS.

The Three-electrode Valve as an Amplifier—High Frequency Multi-stage Amplifiers—Low Frequency Multi-stage Amplifiers—High and Low Frequency Amplifiers—P.O. Land Line Repeaters.

WIRELESS TELEPHONY.

Modulation by Microphone—Telephony Transmitters—Telephony Receivers and Duplex Working—Distortion—Commercial Assets.

DIRECTIONAL WIRELESS.

Introductory Considerations—Directional Transmission—Directional Reception—Sources of Error—Wireless Surveying.

The complete fee for the above Course is £5 10s. payable Cash on enrolment or £6 10s. payable in instalments of 20s. on enrolment and 10s. per month.

NOTE.—Students may enrol for a combined Wireless Telegraphy and Telephony Course and Advanced Wireless and High Frequency Course for a special combined fee of £8 10s. payable cash on enrolment, or £10 10s. payable in instalments of £1 on enrolment and thereafter 10s. per month.

AUTOMOBILE ENGINEERING COURSE.

This course has been prepared to cover the requirements of every man connected in any way with the Automobile Engineering Industry, whether he be Designer, Draughtsman, Manufacturer, Works Manager, Foreman, Mechanic, Garage Hand, Chauffeur, Commercial Vehicle Driver, or Salesman. The course is in five sections dealing with both the theoretical and practical aspects of the subject, and in addition, a separate section deals with Design and Calculations.

The subjects are as follows :—

SECTION " A. "

PRACTICAL MATHEMATICS.

The course commences with a short series of lessons in this subject, written in a simple and attractive manner. The lessons are essentially of the practical type, and give only such matter as is absolutely essential for a successful study of the various branches of Automobile Engineering. The lessons deal with *Arithmetic, Algebra, Mensuration of Areas and Solids, Simple Equations, Logarithms, Trigonometry, etc.*

APPLIED MECHANICS.

Matter, Force, Weight, Triangle Polygon of Forces, Moments, Centre of Gravity, Stress, Strain, Elasticity, Tension, Compression, Shear, Shafts, Springs, Work, Power, Mechanism, Friction, Velocity and Acceleration, Horse-Power, Transmission of Power, Dynamometers, Flywheels, Centrifugal Force, Hydraulics, Materials, etc.

SECTION " B. "

(1) AUTOMOBILE ENGINES.

The Thermodynamics, Construction and Design of all types of Four-Stroke and Two-Stroke Engines for Automobile purposes are dealt with fully. Every Unit and Detail of an engine is then dealt with from first principles and copious practical information of all types of engines is given. Descriptions and illustrations of every class of modern motor vehicle, and hints on tuning and adjustments are given.

(2) CARBURETTORS AND CARBURATION.

The Theory of Combustion and Carburation, the Chemistry of Fuels and the Design of Carburettors are dealt with fully. Descriptions and Illustrations of all types of Carburettor are given, with numerous hints and information on Tuning, Adjustments, Testing, etc.

(3) CHASSIS AND TRANSMISSION.

The Design and Construction of Frame, Gear Box, Back Axle, Wheels, Steering, Clutch, Springs, Brakes, etc., of every type of car are fully explained and discussed. Hints of Driving, Lubrication, Adjustments and General Care of all Components are given fully.

(4) MAINTENANCE AND REPAIRS.

This section is particularly useful for every class of practical motor engineer. The car as a whole, and then each component part, e.g., *Engine, Gear Box, Clutch, Transmission, Brakes, Bodywork* are treated in detail. *Adjustments, Repairs, Lubrication, Cleaning, Adjustments, Tuning and Ignition Faults* are fully discussed.

(5) IGNITION AND ELECTRICAL EQUIPMENT.

This constitutes a course in itself. *Storage Batteries, Electrical Machines, Starting Motors, Three-Brush Generators and Automatic Cutouts, Ignition Systems, and Wiring Systems* are amongst the main headings. Every aspect of the subject is treated, with numerous practical examples and hints.

**Fee for complete Course £7 10s. cash, or, £8 10s.
payable 20s. on enrolment and 10s. per month.**

ELECTRICAL EQUIPMENT OF AUTOMOBILES COURSE.

(Ignition, Starting, Lighting, etc.)

This course has been specially prepared for motor engineers and mechanics who have had a good training in the mechanical side of automobile construction, but have had no opportunity of making a thorough study of the practical and technical aspects of the electrical part of the car. The motor industry is notoriously short of qualified automobile electrical equipment engineers; the ordinary electrician does not usually possess the requisite specialised knowledge and experience of automobile work to give him the necessary confidence to deal with the numerous problems arising in the car. In consequence there is a big demand for "equipment experts" who have had a thorough technical training in the various electrical branches of automobile engineering. It is to provide this specialised knowledge that this course has been completed.

The course commences with a short series of lessons in **Practical Mathematics**, followed by a course in **Magnetism and Electricity**. A brief syllabus of the subjects covered by the Electrical Equipment Section is as follows:—

AUTOMOBILE ELECTRICAL EQUIPMENT.

Storage Batteries, action, charging, discharging, sulphation, care and maintenance, faults and tests; Electrical Machines, principles of the electric motor and electric generator; The Starting Motor, battery starting system, starting conditions, series motor, size of motor, 6 and 12 volt systems, starting troubles; Three Brush Generator and Automatic Cut-out, shunt generator, armature reaction, reverse current relay, generator troubles; The Ignition System, induction coil, distributor, contact breaks, battery coil ignition, magnetic ignition, sparking plugs, spark advance and retard, tuning, special equipment, ignition faults; wiring systems and location of faults in wiring and windings, branch circuits, armature, etc.

Students taking this course receive a separate book of wiring diagrams and plates, showing the ignition, starting and lighting systems of all best known British, European and American cars.

Fee for complete course £4 15s. payable cash on enrolment, or £5 10s. payable 20s. on enrolment and 10s. per month.

CIVIL ENGINEERING COURSE.

This course has been prepared for the man whose aim is to hold a position of responsibility, in England or Abroad, as a Civil Engineer. It is especially suitable for Municipal and County Engineers and Assistant Engineers in the Public Works Department.

As the following brief syllabus will show, every branch of Civil Engineering is dealt with. This course is invaluable as a "stepping stone" for students whose ultimate aim is to pass one of the higher examinations, such as those of the Institution of Municipal and County Engineers and the Institution of Civil Engineers.

The brief syllabus is as follows :—

PRACTICAL MATHEMATICS.

The course commences with a series of lessons in Practical Mathematics, written in a simple and attractive manner. The lessons commence from first principles of Arithmetic, if necessary, and include *Algebra, Logarithms, Mensuration, Equations, Co-ordinate Geometry, Trigonometry, Differential and Integral Calculus, Differential Equations.*

APPLIED MECHANICS.

MATERIALS AND STRUCTURES.

First Principles, Forces, Triangle and Polygon of Forces, Moments, Centre of Gravity, Couples, Link Polygon, Simple Structures, Stress, Strain and Elasticity, Beams and Girders, Arches, Shafts, Springs, Retaining Walls, Strength and Elasticity of Materials.

MACHINES AND HYDRAULICS.

Work, Energy, Power Machines, Dynamometers, Friction, Velocity and Acceleration, Inertia, Kinetic Energy, Centrifugal Force, Link Mechanism, Valve Diagrams, Flywheels, Governors, Transmission of Power, Gearing, Hydraulics, Centre of Pressure, Pumps, Flow of Fluids, Bernoulli's Law, Resistance of Ships, Hydraulic Pumps and Turbines, Centrifugal Pumps, Hydraulic Experiments.

PRACTICAL CIVIL ENGINEERING.

Ordnance Maps, Surveying and Levelling, Adjustment of Instruments, Calculation of Earthwork, Quantities, Beams, Pillars and Stanchions and Shofting, Design of Engineering Structures, Arches, Graphic Statics, Materials, Pile Driving, Brickwork and Masonry, Walls, Carpentry, Construction and Maintenance of Roads, Reinforced Concrete Construction, Masonry Bridges, Weirs and River Works, Hydraulics, Drainage, Pumping, Water Power, Sewage Disposal, Sanitation, Refuse Disposed, Waterworks, Reservoirs, Brick and Steel Chimneys, Structure in Iron and Steel, Tramways, Specifications.

Fee for complete Course £9 10s. payable cash on enrolment or £10 10s. payable 20s. on enrolment and 20s. per month.

STRUCTURAL COURSE.

This course is invaluable to Civil and Mechanical Engineers whose work demands a knowledge of the various branches of Constructional Engineering, Building Construction, etc. It goes thoroughly into the theory and practical applications of Structural Engineering, and covers the Theory of Structures portion of the syllabus for the A.M.I.Struct.E. Examination, and the Structures portion of the A.M.I.Mech.E. and A.M.I.C.E. examinations.

The brief syllabus is as follows :—

PRACTICAL MATHEMATICS.

Sufficient mathematics is given to enable the student to make an intelligent and successful study of all branches of Structural Engineering. The lessons include, if necessary, **Algebra, Logarithms, Mensuration, Equations, Co-ordinate Geometry, Trigonometry, Differential and Integral Calculus, Differential Equations, etc.**

STRUCTURES. (and Strength of Materials)

Introductory Principles, Forces Acting at a Point, Parallelogram, Triangle and Polygon of Forces, Parallel Forces, Centre of Gravity, Beams, Reactions of Supports, Forces in different planes, Couples, Analytical and Graphical Methods of Systems of Forces, Link Polygon, Simple Structures, Force Diagrams, Dead and Wind loads, Simple Stresses and Strains, Cylindrical and Spherical Shells, Riveted Joints, Elasticity Stress due to change in Temperature, Shear and Oblique Stresses, Stress Diagrams, Strength of Beams, Bending Moments and Shearing Forces, Moment of Resistance, Beams of Uniform Strength, Deflection of Beams, Curvature and Slope, Standard Cases of Beams, Encastré Beams, Propped Cantilevers and Beams, Girders, Resilience, Gradual, Sudden and Impulsive Loads, Wind Pressure, Travelling Loads, Continuous Beams, Bridge Girders, Reinforced Concrete Beams, Columns, Euler's, Rankine's and other formulæ, Non-Axial Loading, Arches, Suspension Bridges, Earth Pressure, Wedge Theory, Retaining Walls and Foundations, Strength and Elastic Properties of Materials, etc., etc.

Lessons in Hydrostatics may also be included in this course if desired, free of extra cost.

Fee for complete course £4 cash on enrolment, or £4 15s. payable 20s. on enrolment and 10s. per month.

HYDRAULICS AND HYDRAULIC MACHINERY COURSE.

This course has been prepared for a Civil or Mechanical Engineer who already possesses a good general engineering knowledge, but wishes to make a more specialised, advanced and theoretical study of the various branches of Hydraulic Engineering. The course deals from first principles with the theory of Hydraulics and its practical applications. It will be found particularly helpful for students wishing to take the Higher Examinations in this subject, such as the B.Sc. (Eng), A.M. Inst. C.E., A.M.I.Mech.E. Examinations, the syllabuses of which it covers.

The brief syllabus is as follows :—

The course commences with a series of lessons in Practical Mathematics and Applied Mechanics, if necessary, sufficient to enable the student to make a really intelligent and successful study of all branches of Hydraulics.

PRACTICAL MATHEMATICS.

Includes Algebra, Logarithms, Mensuration, Equations, Co-ordinate Geometry, Trigonometry, Differential and Integral Calculus, etc.

APPLIED MECHANICS.

Includes Strength and Elasticity of Materials, Structures and Machines as far as necessary for subsequent studies of Hydraulic Problems.

HYDRAULIC ENGINEERING.

Static Pressure of a fluid, The Hydraulic Press, Pressure Gauges, Pressure on Lock Gates and Dams, Buoyancy Metacentric Height, Flow of Fluids, Bernoulli's Theorem, Venturi Meter, Flow of Gases, The Pitot Tube, Flow through Orifices, Notches and Weirs, Friction and Flow through pipes, Resistance of Ships, Hydraulic Gradient, Transmission of Power through Pipes, Nozzles, Flow through open channels, Measurement of Flow, River Bends, Water Supply and Rainfall, Reciprocating Pumps, Various types, Air vessel on Suction and Delivery Pipes, Impact of Water, Pressure of Jets on Stationary and moving vanes, Radial Vanes, Velocity Triangles, The Propulsion of ships, Water Turbines, Classification, Reaction Turbines, Outward and Inward Flow, Axial and Mixed Flow, Impulse Turbines, Velocity Triangles, Barker's Mill, Pelton Wheel, Governors, Centrifugal Pumps, Turbine Pumps, Multi-stage Pump, Viscous Resistance of Fluids, Effect of Temperature, Stream Line, Resistance of Bearings, Hydraulic Machines, Meters, Valves, Accumulators, Intensifier, Venturi Meters, Hydraulic Presses, Cranes, Lifts and Capstans, Valves, Joints, Packing, etc., etc.

Fee for complete course £5 10s. payable cash on enrolment, or £6 10s. payable 20s. on enrolment and 10s. per month.

PRACTICAL MATHEMATICS COURSE.

This course has been specially prepared for the man who wishes to acquire rapidly a sound training in Mathematics preparatory to taking up studies of the more advanced standard, in general and engineering sciences. For the man who wishes to obtain a position in a technical department, or who wishes ultimately to study for the higher technological examinations, this is a most excellent course. The student may commence at first principles or at any later stage depending upon his previous knowledge.

STAGE 1.

ARITHMETIC.

The Four Operations, Vulgar Fractions, Decimal Fractions, Involution, Evolution, Proportion and Ratio, Percentages, etc.

ALGEBRA.

Substitutions, the Four Operations, Brackets, Simple Equations, Problems, etc.

MEASUREMENT.

Length, Angles, Area, Metric System, Mensuration of Areas.

STAGE 2.

LOGARITHMS.

Multiplication and Division, Involution and Evolution, Common and Napierian Logarithms.

AREAS OF IRREGULAR FIGURES.

Trapezoidal and Simpson's Rules, Planimeters, Mensuration of Solids.

ALGEBRA.

Factors, Fractions and Indices, Problems involving Simple Equations, Simultaneous Equations.

USE OF SQUARED PAPER.

Graphs, Equation of a Line.

STAGE 3.

Simplifications and Partial Fractions, Trigonometry, Solution of Triangles, Trigonometrical Equations, Simultaneous and Quadratic Equations, Indices, Logarithms, Mensuration of Areas and Solids, Co-ordinate Geometry, Projections, Vector Equations, Vector Algebra, Link Polygon.

Arithmetical, Geometrical and Harmonic Progressions, Binomial Theorem, Series.

Limits, Rate of Increase, Simple Differentiation, Maxima and Minima, Successive Differentiation, Taylor's and Maclaurin's Theorems.

Integration, Practical Applications, Centre of Gravity and Moment of Inertia, Fourier's Series, Fourier's Theorem, Harmonic Analysis.

Differential Equations, Practical Examples and Applications.

MECHANICS (OPTIONAL).

STATICS.

Composition and Resolution of Forces, Parallel Forces, Moments, Couples, Conditions of Equilibrium, Centre of Gravity, Work, Machines, Friction, Graphic Constructions, Link and Force Polygons, etc.

DYNAMICS.

Velocity, Acceleration, Gravity, Laws of Motion, Impulse, Work, Energy, Simple Harmonic Motion, Kinetic Energy, Momentum, etc.

Fee for complete Course £5 10s. payable cash on enrolment or £6 10s. payable 20s. on enrolment and 10s. per month.

THE NECESSITY AND VALUE OF EXAMINATIONS.

The enormous progress made in Engineering Science, whilst commanding the admiration and thanks of humanity, must bring in its train an element of grave danger.

The stupendous forces with which we now deal are a means of incalculable danger except where controlled by the expert mind.

Man builds a huge liner driven by machines producing tens of thousands of horse power. Every conceivable precaution is taken to avoid accident, but serious accidents happen and disaster results. He equips his mighty power stations with safety devices, but calamities occur. He prepares intricate calculations and stress diagrams before designing a steel structure. An error occurs, and we read of the devastating collapse of a building.

Whilst our machines and technical principles may be perfect, man is but human—and errs. The incalculable margin of human error must always enter into the order of things, and results in the finest production of the engineer proving a menace to safety.

To safeguard against the hand of the ignorant, Governments, Authorities, and private enterprises *insist* more than ever that Engineers holding positions of responsibility *shall be qualified*; that is, shall show that they have an exhaustive knowledge of the principles underlying the vast powers which they control. To give but an instance. The Board of Trade insist that Sea-going Engineers in the Mercantile Marine shall pass a Board of Trade Examination before they are allowed to take any true responsibility.

Specialised examinations in most branches of engineering are now held. These examinations are recognised as a thorough test of an engineer's knowledge by all Public Services, Companies and large Engineering Employers throughout the world. The man passing such examinations is hall-marked as a "professional," where before he was but a tradesman, and can always command a responsible post with adequate remuneration.

The Engineer who wishes to get out of the rank and file must equip himself to meet this new condition of the labour market which demands qualified men for posts of responsibility. The services of qualified engineers are eagerly sought and handsomely paid for. It is our ideal to prepare eventually every one of our students for a recognised examination. Whilst it may be advisable for many students first of all to take up one of our general courses of instruction, it should always be borne in mind that all such courses have been purposely designed to constitute ideal stepping-stones to our more advanced examination courses. Accordingly every one of our students may feel that he is being trained with the ultimate object of passing a recognised Engineering Examination.

SYLLABUSES OF EXAMINATION COURSES.

It is important to remember that our Examination Courses are not made up from sections of our Non-Examination Courses, as is often the case, but have been specially prepared to cover precisely the requirements of the actual examinations. The Examination Courses, have in each case been prepared by acknowledged authorities who for many years have devoted their attention to coaching candidates in specialised examinations subjects.

We have a very thorough knowledge of the particular requirements of the various examinations, and keep in close touch with all current examination papers. Any fresh type of question which is likely to appear is incorporated in our courses, which are thus kept strictly up-to-date. Candidates may accordingly entrust their coaching in our hands with all confidence.

IMPORTANT.

It should be specially noted that all Examination Courses can commence from very first principles of Mathematics, if necessary, and are quite complete in themselves. When a student enrolls we definitely guarantee to coach him until he has passed his examination. Whilst he should pass at his first attempt, if for any unforeseen reason he should fail, then we coach him for his next and any subsequent attempts without any further charge whatsoever. Thus our student knows that for one moderate fee he will receive tuition until he has qualified.

Students who do not wish to sit for a professional examination, may still take any of the following courses, as apart from preparing candidates for recognised examinations, they will give the student a most valuable technical training, commencing from first principles and proceeding to an advanced standard.

EXAMINATIONS HELD BY THE INSTITUTION OF CIVIL ENGINEERS.

The Institution of Civil Engineers is generally looked upon as the major Engineering Institution and the qualification A.M.I.C.E. is recognised throughout the World. The qualification is particularly valuable to Engineers engaged in the Indian, Egyptian and other Government Services and by all engaged on Municipal and other Civil Engineering work at home or abroad. Our Tutorial Department makes a scientific study of the questions set at the various Examinations, and our Courses are constantly revised to

incorporate any questions that are likely to occur. Special attention has been given to our specialised Course covering Section " C " of the Associate Membership Examination, as the information required for this section cannot be found in Text Books.

The Institution of Civil Engineers holds two Examinations, namely—**Preliminary** and **Associate Membership**.

An entry for the Associate Membership Examination cannot be received until the Preliminary Examination has been passed or the candidate exempted therefrom. *Among others*, Graduates of any University in the British Empire, or those who have passed the London Matriculation by taking more advanced Mathematics and Mechanics or Chemistry or Physics, may claim exemption from the Preliminary.

The Examinations are held in London every April and October. The April Preliminary Examination may also be held at Manchester, Glasgow and Newcastle. The Examinations may also be held in British Overseas Dominions, the Associate Membership in October and the Preliminary in both April and October.

**SYLLABUS OF OUR PRELIMINARY INSTITUTION OF CIVIL
ENGINEERS EXAMINATION COURSE.**

It should be noticed that all candidates for the Associate Membership must take this Examination (unless they are exempted) irrespective of these ages.

SUBJECTS.

1. *ENGLISH*.—A general paper comprising questions in Geography, History and Literature.
2. *MATHEMATICS*, comprising Arithmetic, Algebra (*up to and including binomial theorem*), Geometry (Euclid I.-VI.), Plane Trigonometry (*up to and including solutions of triangles*).
3. *FOREIGN LANGUAGE*.—A paper consisting of passages to be translated from the language into English and vice versa. (We coach in French only, having specialised in this popular language.)
4. Any ONE of the following subjects :—

ELEMENTARY MECHANICS of solids and fluids.

ELEMENTARY PHYSICS (*Heat, Light, Electricity and Magnetism*).

ELEMENTARY CHEMISTRY.

**SYLLABUS OF OUR
SPECIAL CIVIL ENGINEERING
OR**

A.M.I.C.E. EXAMINATION COURSE

(NOTE: This Course has been specially prepared to cover the A.M.I.C.E. Examination).

Candidates must be Students of the Institution who are over 21 years of age, or approved Civil Engineers who are over 25 years of age and have passed the Preliminary Examination. The Examination may be taken in Sections, but no candidate will be allowed to sit for Section " B " without Section " A " unless he has already passed this Section.

SECTION " A " (four subjects).

1. *MECHANICS (Statics, Hydrostatics, and Kinetics of Plane Motion).*
2. *STRENGTH AND ELASTICITY OF MATERIALS.*
3. *ELECTRICITY AND MAGNETISM.*
4. *Either* (a) Theory of Structures,
or (b) Theory of Machines.

SECTION " B "

(two subjects only to be taken, not more than one from any group).

- GROUP (i) *GEODESY, STABILITY AND RESISTANCE OF SHIPS, APPLICATIONS OF ELECTRICITY.*
- GROUP (ii) *HYDRAULICS, THERMO AND ELECTRO-CHEMISTRY, METALLURGY.*
- GROUP (iii) *GEOLOGY AND MINERALOGY, APPLIED CHEMISTRY, THEORY OF HEAT ENGINES.*

SECTION " C " (one subject).

ENGINEERING DRAWINGS, SPECIFICATIONS AND QUANTITIES.

Please note that there is no exemption from "Section C." Our course covering this section is unique. It has been prepared by one of the leading authorities in the country who has for many years lectured in the necessary subjects at a branch of the London University.

F E E S.

Preliminary Examination Course, £5 10s payable cash on enrolment, or £6 payable 20s. on enrolment and thereafter 10s. per month.

Associate Membership Examination Course (A.M.I.C.E.) £11 payable cash on enrolment or £12 10s. payable in instalments of £1 on enrolment and thereafter £1 per month.

The fee for a combined Preliminary and Associate Membership course which we advise where the student must sit for the Preliminary Examination) £14 payable cash on enrolment, or £15 10s. payable in instalments of £1 on enrolment and thereafter £1 per month.

The above fees include all **Books, Instruction, Instruments, Lessons, Unlimited Tuition, etc.** (See page 59).

On successful completion of our A.M.I.C.E. Course, the student is awarded our **Advanced Diploma** and is elected to full **Membership** of this Institute.

EXAMINATIONS HELD BY THE INSTITUTION OF MECHANICAL ENGINEERS.

The **A.M.I.Mech.E.** qualification hardly needs introduction. It is probably the best known qualification in the Engineering World.

The large majority of Mechanical Engineers holding responsible positions have the letters **A.M.I.Mech.E.** attached to their names, a fact which surely indicates the value of this qualification. The **A.M.I.Mech.E.** Examination appeals to every type of Mechanical Engineer owing to the wide range of optional subjects allowed in Section B. We need simply add that the **A.M.I.Mech.E.** qualification is recognised throughout the civilised world as the hall mark of the thoroughly qualified Mechanical Engineer and a man holding it need never worry about the future—his future is assured.

The Institution of Mechanical Engineers holds two Examinations, namely, **Studentship** and **Associate Membership**.

The Examinations are held in London, Aberdeen, Basingstoke, Belfast, Birmingham, Cardiff, Darlington, Glasgow, Hull, Leeds, Liverpool, Manchester, and Nottingham, twice annually, in April and October, and in certain centres overseas once annually.

SYLLABUS OF OUR STUDENTSHIP (STUD.I.MECH.E.) EXAMINATION COURSE.

The Studentship Examination may be taken between the ages of 16 and 25 years. *Candidates over 20 years of age may, however, take the Associate Membership Examination direct in place of the Studentship, which is generally advisable.*

The complete Studentship Examination consists of four subjects, viz:—

1. **GENERAL KNOWLEDGE.**—An English Essay, English Literature, Geography and History.
2. **ELEMENTARY MATHEMATICS.**—*comprising*, Arithmetic, Algebra (*up to and including quadratic equations*) Elementary Trigonometry and Geometry.
3. **ELEMENTARY MECHANICS**, Dynamics and Statics
4. *One of the following:—*
either (a) **ELEMENTARY PHYSICS** (Heat, Light, Electricity and Magnetism), or
(b) **ELEMENTARY CHEMISTRY** (Inorganic).

GRADUATESHIP.

(G.I.MECH.E.)

Candidates for Graduateship must be between the ages of 21 and 30 years, and must have passed Section "A" and "B" of the Associate Membership Examination. A Graduate must pass Section "C" before being transferred to the class of Associate Membership.

ASSOCIATE MEMBERSHIP EXAMINATION.

(A.M.I.Mech.E.)

An Associate Member of the Institution of Mechanical Engineers must be at least 27 years of age. It should, however, be clearly understood that it is *not necessary to attain this age before sitting for the A.M.I.Mech.E. Examination*, as candidates over 20 years of age may take the Examination. If they pass Section "A" and "B" they may apply to become Graduates (G.I.Mech.E.), and having also passed Section "C" they will not be required to take any further Examination when applying for Associate Membership.

Candidates who have passed the Examination before they are 27, although unable to become Associate Members of the Institution of Mechanical Engineers, will be able to show that they have *passed* the A.M.I.Mech.E. Examination, which is a sufficient hall-mark of efficiency and must result in their advancement.

Every Mechanical Engineer, whatever his age, should make the A.M.I.Mech.E. qualification his ultimate aim, although it might first of all be advisable to take our general Mechanical Engineering Course. Advice on this matter will be willingly given. (*It should be noted that our A.M.I.Mech.E. course is quite complete in itself and can commence from very first principles, if necessary.*)

Important. Candidates over 33 years of age will receive full exemption from Section "A." Prospective students approaching this age should not, however, delay their enrolment as it is necessary to study certain basic subjects before studying the more advanced subjects in Sections "B" and "C."

SYLLABUS OF OUR SPECIAL MECHANICAL ENGINEERING OR A.M.I.Mech.E. EXAMINATION COURSE

(NOTE: *This Course has been specially prepared to cover the A.M.I.Mech.E. Examination.*)

SECTION "A"

(*Three subjects must be taken in this section.*)

They are:—

- (a) **MODERN LANGUAGE.**—We coach in **FRENCH ONLY.** (*This is not an advanced paper.*)
- (b) **APPLIED MATHEMATICS.**—Statics, Hydrostatics and Dynamics.
- (c) **PHYSICS AND CHEMISTRY.**—Heat, Light and Sound, Electricity and Magnetism and Inorganic Chemistry.

SECTION " B "

(THREE SUBJECTS ONLY are to be taken.)

They are :—

- (a) *THEORY OF MACHINES AND MACHINE DESIGN.* (Compulsory.)
- (b) *PROPERTIES AND STRENGTH OF MATERIALS.* (Compulsory.)
- (c) *One paper only* to be taken from the following :—
 - (1) *STEAM AND THE STEAM ENGINE.*
 - (2) *INTERNAL COMBUSTION ENGINES.*
 - (3) *HYDRAULICS AND HYDRAULIC MACHINERY.*
 - (4) *ELECTRO-TECHNICS* and Mechanical Design of Electric Machinery.
 - (5) *METALLURGY.*

SECTION " C. "

THE ECONOMICS OF ENGINEERING.

One paper only, *comprising* :—

- (1) A short essay (*to test the Candidate's power of expression*).
- (2) General Economics and History of Mechanical Engineering.
- (3) Workshop Organisation and Management.

TUITION FEES.

Studentship Examination Course, £5 cash on enrolment or £5 10s. payable 20s. on enrolment and 10s. per month.

Associate Membership Examination Course. £ (Including Tuition in French). £11 cash on enrolment or £12 10s. payable 20s. on enrolment and 20s. per month.

If tuition in French is not required the fee is £9 5s. cash or £10 10s. payable 20s. on enrolment and 20s. per month.

The above fees include all **Books, Instruments, Tuition, etc.** (See page 59.)

Fees for combined Studentship and Associate Membership Course or for Tuition in separate subjects or Section will be quoted on request.

On successful completion of our A.M.I.Mech.E. Course, the student is awarded our **Advanced Diploma** and is elected to full **Membership** of the Institute.

EXAMINATION HELD BY THE INSTITUTION OF ELECTRICAL ENGINEERS. (A.M.I.E.E.)

What has been said of the A.M.I.Mech.E. qualification may be truly said of the A.M.I.E.E. qualification in respect of Electrical Engineering. It is certainly the most valuable qualification an Electrical Engineer can possess. It is accepted as a mark of expert efficiency by Electrical Engineering employers in this country and throughout the world, and the Electrical Engineer who intends reaching the top of his profession must make this qualification his final goal. Once this qualification has been achieved he will find opportunities abounding everywhere. This is the age of Electricity and as the years roll by *qualified* Electrical Engineers are in increasing demand.

IMPORTANT NEW REGULATIONS.

The Institution of Electrical Engineers has recently altered the Examination Regulations. Under the new Rules the Examination is termed "The Graduateship Examination." The Secretary of the Institution has informed us that *the Examination is now an "open" one*. In other words anyone is now allowed to take the examination, and pass or fail on his merits.

Having passed the Examination the candidate can become eligible for election as Graduate (Grad. I.E.E.) or as Associate Member (A.M.I.E.E.), according to his age and experience. A Graduate must be at least 21 years of age, and an Associate Member (in the usual way) at least 25 years of age. It is not necessary to be any specific age before passing the actual examination.

In view of the fact that the examination is now an "open" one, all interested in Electricity should aim at passing the examination with the least delay. Our A.M.I.E.E. course is thoroughly complete in itself and can commence from the very first principles where necessary. Accordingly all may take the Course with full confidence of passing the Examination successfully.

The Examination is held in May and November each year in London, Belfast, Birmingham, Cardiff, Dublin, Glasgow, Manchester, Newcastle and Plymouth. The Examination may also be held abroad.

SYLLABUS OF OUR SPECIAL ELECTRICAL ENGINEERING OR A.M.I.E.E. COURSE.

(NOTE:—This Course has been specially prepared to cover the Examination held by the Institution of Electrical Engineers.)

The Examination is divided into Two Sections, and both parts must be taken together.

PART I. (four subjects to be taken).

- (a) *ENGLISH ESSAY* or *TRANSLATION FROM MODERN FOREIGN LANGUAGE*. (We generally advise the English Essay Paper.)
- (b) *APPLIED MECHANICS*. (including *Strength of Materials*).
- (c) *either HEAT, LIGHT AND SOUND* or *INORGANIC CHEMISTRY*.
- (d) *ELECTRICAL TECHNOLOGY*.

PART II. (one subject only to be selected).

- (a) *ELECTRIC SUPPLY* (*Generation, Transmission, and Distribution*).
- (b) *ELECTRIC LIGHTING AND POWER INSTALLATIONS*.
- (c) *ELECTRIC TRACTION*.
- (d) *TELEGRAPHY*.
- (e) *TELEPHONY*.
- (f) *WIRELESS AND HIGH FREQUENCY ENGINEERING*.
- (g) *Application of Electricity to Mines*.
- (h) *Electro-Chemistry and Electro-Metallurgy*.
- (i) *Design and Manufacture of Electrical Machinery* (Rotating Machinery and Transformers).
- (j) *Design and Manufacture of Electric Apparatus* (Switchgear, Control gear, and measuring instruments and domestic appliances).
- (k) *Meters and Measuring Instruments*.

TUITION FEES.

Complete A.M.I.E.E. Course, Parts I. and II., £9 10s. cash, or £10 10s., payable 20s. on enrolment and 20s. per month.

The above Fees include all Books, Instructions, Instruments, Lessons, unlimited Tuition, etc. (See page 59.)

On successful completion of our A.M.I.E.E. Course, the student is awarded our **Advanced Diploma** and is elected to full **Membership** of the Institute.

**THE EXAMINATION HELD BY THE INSTITUTION OF
AUTOMOBILE ENGINEERS.
(A.M.I.A.E.)**

The A.M.I.A.E. is the most important qualification in the Automobile World. It is fitting proof of a Motor Engineer's Technical abilities and opens up to the practical man opportunity to secure first-class appointments. The A.M.I.A.E. is to the Automobile Engineer what the A.M.I.E.E. is to the Electrical Engineer. The qualification is particularly valuable to all Motor Engineers who are in business on their own account, or who aim at Executive Appointments, as it confers upon the holder a Technical Status commanding recognition.

The A.M.I.A.E. Examination is held twice yearly in January and May at centres which are arranged as far as possible to meet the convenience of candidates. The Examination commences at 7.30 p.m. and comprises 10 questions of which 8 only may be attempted. No fee is charged for taking the Examination.

An Associate must be at least 23 years of age, but the Examination may be taken by candidates below this age.

**SYLLABUS OF OUR
SPECIAL MOTOR ENGINEERING
OR,
A.M.I.A.E. EXAMINATION COURSE.**

(NOTE: This Course has been specially prepared to cover the A.M.I.A.E. Examination).

1. **MATHEMATICS.**—Mensuration, Geometry, Algebra and Trigonometry.
2. **PRECISE MEANING OF TECHNICAL TERMS.**
3. **MECHANICS.**
4. **MATERIALS.**
5. **MOTOR VEHICLE PROBLEMS.**
6. **HEAT.**
7. **ELECTRICITY.** (Including Electrical Equipment.)

TUITION FEES.

The complete fee for our A.M.I.A.E. Examination Course is £7 10s payable cash on enrolment or £8 10s. payable 20s. on enrolment and 10s. per month.

The above fees include all Books, Lessons, Instructions, Instruments, Unlimited Tuition, etc. (See page 59.)

On successful completion of our A.M.I.A.E. Course, the student is awarded our **Advanced Diploma** and is elected to full **Membership** of the Institute.

**EXAMINATIONS HELD BY THE
INSTITUTION OF STRUCTURAL ENGINEERS.**

The Institution of Structural Engineers holds a Graduateship (Grad.I.Struct.E.) and Associate Membership (A.M.I.Struct.E.) Examination. The Examinations are held in July and December. Candidates must secure a minimum of 40 per cent. of possible marks in order to pass.

SYLLABUS OF OUR GRAD.I.STRUCT.E. EXAMINATION COURSE

Note.—Graduates must be at least 21 years of age.

1. **PRINCIPLES OF STATICS AND THEORY OF STRUCTURES.**
2. **STRENGTH AND ELASTICITY OF MATERIALS.**
3. **THREE SUBJECTS to be selected from the following:—**
 - (a) **INORGANIC CHEMISTRY.**
 - (b) **PHYSICS (STATICS, DYNAMICS, HEAT, LIGHT, SOUND, ELECTRICITY AND MAGNETISM).**
 - (c) **HYDRAULICS.**
 - (d) **GEOLOGY.**
 - (e) **SURVEYING.**

**SYLLABUS OF OUR
SPECIAL STRUCTURAL ENGINEERING
OR
A.M.I.Struct.E. EXAMINATION COURSE.**

(NOTE : This Course has been specially prepared to cover the A.M.I.Struct.E. Examination).

1. **THEORY AND DESIGN OF STRUCTURES.**
2. **REINFORCED CONCRETE.**
3. **STRUCTURAL STEELWORK.**
4. **PRACTICAL DESIGN.**

Note.—The A.M.I.Struct.E. Examination may be taken by candidates over 21 years of age, but such candidates cannot be admitted to Associate Membership until they have attained the age of 25.

TUITION FEES.

Complete Graduateship Examination Course £7 cash on enrolment or £8 payable 20s. on enrolment and 10s. per month.

Complete Associate Membership Examination Course £7, payable Cash on enrolment or £8 payable £1 on enrolment and 10s. per month.

The fee for a combined Graduateship and Associate Membership Course (which we advise) is £11, payable Cash on enrolment or £12 10s. payable £1 on enrolment and thereafter £1 per month.

The above fee includes all **Books, Lessons, Instructions, Instruments, Unlimited Tuition**, etc. (*See page 59.*)

On successful completion of the Grad.I.Struct.E. Course, the student is awarded our Ordinary **Diploma** and is elected to **Associate Membership** of this Institute.

**EXAMINATIONS HELD BY THE CITY AND GUILDS OF
LONDON INSTITUTE.**

These examinations are so well known that introductory remarks are unnecessary. We coach for many of the **City and Guilds Examinations**, including the various grades of **Mechanical Engineering, Motor Engineering, Telegraphy and Telephone, Radio-communication, and Engineers' Quantities.**

CITY AND GUILDS EXAMINATION IN MECHANICAL ENGINEERING.

The examinations are divided into two divisions, **Division I.** suiting the requirements of Engineering Assistants, Draughtsmen, and Designers, and **Division II.** the requirements of those engaged in Engineering Trades. Only the final examination is held in centres in England and Wales, and therefore students in these countries must take the final examination direct, and should enrol for a combined course covering Grades I., II., and Final Examination in their chosen divisions.

DIVISION I. (MECHANICAL ENGINEERING).

GRADE I.

1. *APPLIED MECHANICS.*
2. *HEAT ENGINES.*

GRADE II.

1. *MORE ADVANCED MECHANICS.*
2. *STRENGTH OF MATERIALS.*
3. *Either HYDRAULICS,
or STEAM AND HEAT ENGINES.*
4. *DRAWING AND DESIGN* of simple machine and engine details.

FINAL EXAMINATION.

Candidates in England and Wales must sit for the Final Examination direct. Other candidates must take Grades I. and II. before sitting for the Final Examination. To obtain a certificate on the results of the Final Examination the candidate must pass a written Examination in the same year, and submit a design on a subject for which data will be forwarded.

1. *WRITTEN EXAMINATION.*—The examination may include more advanced questions on the subjects in Grade II. and advanced questions in the following:—
 - (a) *STRENGTH OF MATERIALS.*
 - (b) *STEAM AND HEAT ENGINES.*
 - (c) *HYDRAULICS.*
2. *DESIGN.*—Data for design in Mechanical Engineering to be worked and drawn will be forwarded. *In submitting his drawings, etc., the candidate must also forward Statutory Declaration stating that the design has been executed by the candidate himself without assistance.*

DIVISION II. (MECHANICAL ENGINEERING.)

Students in England and Wales should enrol for a Combined Course covering Grades I., II. and Final, as such students must sit for the Final Examination (which requires a knowledge of the subjects in Grades I. and II.) direct.

GRADE I.

1. *DRAUGHTSMANSHIP. (Elementary.)*
2. *GEOMETRY AND MENSURATION.*
3. *MACHINERY. (General elements.)*
4. *WORKSHOP KNOWLEDGE.*
5. *MATERIALS.*

GRADE II.

1. *MACHINE DRAWING.*
2. *STATICS, DYNAMICS.*
3. *MECHANISM.*
4. *Either PATTERN MAKING AND FOUNDRY WORK,
or MACHINING, TURNING AND FITTING.*

FINAL EXAMINATION.

Candidates in England and Wales must sit for the Final Examination direct. Other candidates must take Grades I. and II. before sitting for the Final Examination.

The Examination is divided into two sections :—

SECTION " A. "

1. *MACHINE DRAWING.*
2. *MECHANISM.*
3. *DYNAMICS.*
4. *STRENGTH OF MATERIALS.*

SECTION " B. "

Either (a) Pattern Making and Founding,
or (b) Machining, Fitting and Turning (including Tool Room work, erection treatment of materials and factory lay-out).

TUITION FEES.

The fee for our Course covering Grade I. and II Examinations in either Division I. or Division II. is £7 10s. cash on enrolment, or £8 10s. payable 20s. on enrolment and 10s. per month

The fee for our Course covering the Final Examination in either Division I. or Division II. is £8 10s. cash or £9 10s. payable 20s. on enrolment and 10s. per month.

The fee for a combined Course covering Grades I., II. and Final in either Division I., or Division II is £11 cash, or £12 10s. payable 20s. on enrolment and 20s. per month.

The above fees include all Books, Lessons, Instructions, Instruments, Unlimited Tuition, etc.

On the successful completion of any of the above Courses the student is awarded our Ordinary Diploma and is elected to Associate Membership of this Institute.

CITY AND GUILDS EXAMINATIONS IN MOTOR ENGINEERING.

Grade I.

1. *PETROL.*
2. *CARBURETTORS AND CARBURATION.*
3. *INDICATED AND BRAKE HORSE POWER.*
4. *ENGINES.*
5. *GEARING.*
6. *CHASSIS PARTS.*
7. *MATERIALS OF CONSTRUCTION.*
8. *ELECTRIC IGNITION.*

Grade II.

The Examination consists of more advanced questions in the subjects given in Grade I. Questions will also be given on **Efficiency** and **Lubricants**.

FINAL EXAMINATION.

Candidates in England and Wales must sit for the Final Examination direct. Other candidates must take Grade I. and II. before sitting for the Final Examination. To obtain a certificate on the results of the Final Examination the candidate must pass a written Examination in the same year, submit a design on a subject for which data will be forwarded.

The Final Examination consists of two parts—a Written Examination and a Drawing Examination.

1. *WRITTEN EXAMINATION.*—In addition to more advanced knowledge of the subjects in Grades I. and II., candidates must possess a knowledge of Steam Road Vehicles and of general problems of motor car engineering.

2. *DRAWING EXAMINATION.*—Candidates will be asked to design any of the mechanical details in a petrol or steam car. A choice of subjects will be given.

TUITION FEES.

The fee for our Course covering Grades I. and II of the City and Guilds Motor Engineering Examinations is £7 10s. cash on enrolment, or £8 10s. payable 20s. on enrolment and 10s. per month.

The fee for our Course covering the Final Examination is as above.

The fee for a combined Course covering Grades I., II. and Final is £11 payable cash on enrolment or £12 10s. payable 20s. on enrolment and 20s. per month.

The above fees include all **Books, Lessons, Instructions, Instruments, unlimited Tuition, etc.** (See page 59.)

On the successful completion of any of the above courses the student is awarded our Ordinary **Diploma** and is elected to **Associate Membership** of this Institute.

CITY AND GUILDS EXAMINATIONS IN TELEPHONY, TELEGRAPHY, AND RADIO COMMUNICATION.

The requirements of the above examinations (**Grades I., II. and Final**) are more than covered by our **General Telephony, Telegraphy and Wireless Courses**, details of which are given on pages 33 and 34 of this prospectus. Students may enrol for any one of these courses on the understanding that they will be coached up to the standard of the Final City and Guilds Examination in the subject they choose.

CITY AND GUILDS EXAMINATION IN MECHANICAL ENGINEERS' QUANTITIES AND ESTIMATING.

The requirements of this Examination, both Grade I. and Final, is more than covered by our **Commercial Engineering and Works Management Course**, details of which are given on page 29. Students may take this Course with our assurance that they will be coached up to the standard of the City and Guilds Final Examination in this subject.

OPEN COMPETITION EXAMINATIONS HELD BY THE ENGINEERING DEPARTMENT OF THE POST OFFICE.

The prospects in the Engineering Department of the Post Office are particularly fine. For instance, Superintending Engineers can earn up to £900 per annum. The Examinations mentioned below are competitive, and are held in London, and, if sufficient candidates, in Belfast, Edinburgh and Manchester.

POST OFFICE

PROBATIONARY INSPECTORS EXAMINATION.

Age limits, 17—20 years. In reckoning age for this purpose candidates may deduct any period served in the Army, Navy or Air Force.

SYLLABUS OF PROBATIONARY INSPECTORS EXAMINATION (G.P.O.)

1. *PURE MATHEMATICS.*
2. *APPLIED MATHEMATICS.*
3. *ELECTRICITY AND HEAT.*
4. *ENGINEERING DRAWING AND DESIGN.*
5. *One of the following subjects :—*
 - (a) *SOUND AND OPTICS.*
 - (b) *TELEGRAPHY AND TELEPHONY.*
 - (c) *CHEMISTRY.*
6. *Personal Qualities.*

POST OFFICE

PROBATIONARY ASSISTANT ENGINEERS EXAMINATION.

Age limits 20—23. In reckoning age for this purpose candidates may deduct any period served in the Army, Navy or Air Force.

SYLLABUS OF PROBATIONARY ASSISTANT ENGINEERS EXAMINATION (G.P.O.)

1. *MATHEMATICS.*
2. *ELECTRO TECHNICS.*
3. *MATERIALS.*
4. *THEORY OF MACHINES.*
5. *One of the following subjects :—*
 - (a) *ALTERNATING CURRENTS.*
 - (b) *ELECTRICAL MACHINES.*
 - (c) *TELEGRAPHY AND TELEPHONY.*
 - (d) *HEAT ENGINES.*
6. *Personal Qualities.*

TUITION FEES.

Our fee for either the Probationary Inspectors' or Probationary Assistant Engineers' Examination is £11 cash on enrolment, or £12 10s. payable 20s. on enrolment and 20s. per month.

The above fee includes all **Books, Lessons, Instructions, Instruments, Unlimited Tuition, etc.** (*See page 59.*)

On successful completion of either of the above Post Office Examination Courses, the student is awarded our Ordinary **Diploma** and is elected to **Associate Membership** of this Institute.

NOTE :—We can offer Courses to cover the "Limited Competition", Examinations and the "Assistant Superintendent of Traffic" G.P.O. Examination. Details will be forwarded on request.

LONDON MATRICULATION EXAMINATION COURSE.

“London Matriculation” is a recognised standard of education, and is a considerable asset in any walk of life. It is also the first step towards taking a B.Sc. degree.

The Examination is held in January, June and September each year. At least five subjects must be taken, of which English, Elementary Mathematics, and a foreign language are compulsory. Students may make their choice of the two other subjects necessary.

We specialise in coaching for the London Matriculation Examination in the following subjects:—

COMPULSORY.

ELEMENTARY MATHEMATICS.

ENGLISH.

FRENCH,

OPTIONAL.

MORE ADVANCED MATHEMATICS.

MECHANICS.

ELECTRICITY AND MAGNETISM.

CHEMISTRY.

HEAT, LIGHT AND SOUND.

MECHANICAL DRAWING.

FEEES.

The complete fee for our Matriculation Course (five subjects) is £7 10s. payable cash on enrolment or £8 10s. payable in instalments of 20s. on enrolment and thereafter 10s. per month.

The above fees include all the necessary books, lessons, instructions, instruments, unlimited tuition, etc. (see page 59).

On the successful completion of our Matriculation Course the student is awarded our Ordinary Diploma (A.M.I.E.T.) and is elected to Associated Membership of this Institute.

THE INSTITUTION OF BRITISH ENGINEERS.

We can offer Courses of Instruction designed to cover exactly the requirements of the various Examinations arranged by the Institution of British Engineers in Civil, Mechanical, Electrical and Automobile Engineering.

However, we feel it desirable to inform all prospective candidates for these Examinations, that the Institution of British Engineers has only recently commenced active operations and that they have informed us (at the time of publication) that no Examination has yet been held and that they cannot tell definitely when they propose holding their first Examination.

Moreover, we have been unable to secure information of any Large Engineering Employers who recognise the Institution's Examinations.]

We desire to remain strictly impartial in the matter, but in the above circumstances we cannot accept any responsibility in advising students to study for the Examinations held by the Institution of British Engineers. Nevertheless, we can offer suitable and moderately priced Courses when desired, and will forward particulars on request.

**EXAMINATIONS HELD BY THE INSTITUTION OF
ENGINEERS (INDIA).**

PRELIMINARY EXAMINATION.

Note.—Candidates must be at least 18 years of age.
subjects to be taken.

1. **ENGLISH.**
2. **LANGUAGES** (*we coach in French only.*)
3. **MATHEMATICS** (*Arithmetic, Algebra to Quadratics, Trigonometry.*)
4. **ELEMENTARY MECHANICS.**
5. *Either* (a) **PHYSICS,**
or (b) **CHEMISTRY.**

ASSOCIATE MEMBERSHIP EXAMINATION.

Note.—Candidates must be at least 25 years of age.

SECTION "A."

1. **PROPERTIES AND STRENGTH OF MATERIALS AND
ELEMENTARY STRUCTURES** (*compulsory.*)
2. *Either* (a) **THEORY OF STRUCTURES.**
or (b) **ELECTRICITY AND MAGNETISM.**

SECTION "B."

3 *subjects* only are to be taken in this Section. Our students may select any 3 of the following:—

1. **STEAM AND OTHER HEAT ENGINES.**
2. **INTERNAL COMBUSTION ENGINES.**
3. **HYDRAULICS AND HYDRAULIC MACHINERY.**
4. **THEORY OF MACHINES AND MACHINE DESIGN.**

SECTION "C."

ENGINEERING DRAWINGS, SPECIFICATIONS AND QUANTITIES.

FEEES.

Preliminary Examination Course £5 10s. payable Cash on enrolment or £6 payable 20s. on enrolment and thereafter 10s. per month.

Associate Membership Examination Course £11 payable Cash on enrolment or £12 10s. payable £1 on enrolment and thereafter £1 per month.

The fee for a combined Preliminary and Associate Membership Course (which we advise where the student must take the Preliminary Examination) is £14 payable Cash on enrolment or £15 10s. payable in instalments of £1 on enrolment and thereafter £1 per month.

The above fees include all Books, Instruction, Instruments, Lessons, Unlimited Tuition, etc. (See page 59.)

On successful completion of the Course the student is awarded our Associate Membership Diploma.

FINAL INTENSIVE COACHING FOR EXAMINATIONS.

When a student is approaching the last stage of his studies, we arrange for him to complete his course about a month before the actual Examination takes place.

Our experts then forecast the Examination papers. Certain "pet" questions are always cropping up in one form or another, and with our extensive experience we can prepare a very accurate forecast of the likely examination questions.

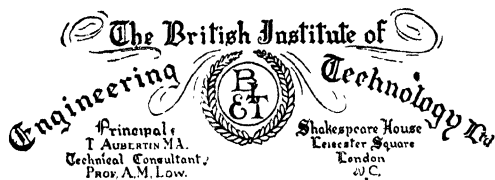
These specimen Examination papers are sent to the student, who attempts our Examination in his own home under true examination conditions. We advise him of the time allowed for each paper, and it is up to him to arrange for someone to "time" him in each subject. When the time limit has expired, the student immediately ceases work as if he was at the actual examination. His attempts are then sent in to us for correction and criticism, and from these attempts at our forecasted examination we can see exactly where his weaknesses, if any, lie. We might find the student to be weak in Mechanics, Physics, or any other subject, and if so we send *special supplementary lessons* in this weak subject in order to strengthen his knowledge. Our Tutors also give special attention and advice to the student.

When we have thoroughly disposed of any weaknesses, if time allows, we send further specimen examination papers, which the student again attempts under *conditions exactly similar to those met with in the examination room.*

By adopting the above methods, not only do we ferret out and strengthen any weaknesses, but our students become familiar with the type of questions met at the examination, and, moreover, become acclimatised to the examination atmosphere—a most important point. This examination practice also enables a student to judge to a nicety the time to allow for each question. Thus are all his forces marshalled so that he may pass the examination barrier with flying colours.

From experience we find that our final intensive coaching for examinations proves invaluable—in fact, we have been informed that this final service is more than worth the fee we charge for our complete course.

OUR DIPLOMA.



This is to Certify that,

William Dixon

has passed the final examination
prescribed by this Institute in

Advanced Mechanical Engineering

having satisfied the examiners
in the following subjects

Practical Mathematics	Strength of Materials
Applied Mechanics	Steam Engines
Physics	Machine Design
Chemistry	Engineering Economics

In Testimony Whereof the Directorate
has awarded this
Diploma
of
Membership
of this Institute

Witness our hand and seal
this 17th day of January, 1928.



T. Aubertin PRINCIPAL

W. Watson SECRETARY

MINIATURE FACSIMILE.

SPECIAL EXAMINATIONS WE HOLD.

THE BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY was originally inaugurated for the specific purpose of giving technical training and coaching for engineering examinations; but it has been made apparent to us that many engineers who already have received a sound technical training will wish to become Members or Associate Members of this Institute and thus enjoy the privileges we offer, without pursuing a further course of technical instruction by taking up one of our courses.

For the benefit of such engineers we are prepared to set examinations based on any of our courses and to successful candidates award our Diploma of Membership or Associate Membership of this Institute. For convenience our examinations are taken in the candidate's own home, and it is necessary for him to complete a Declaration Form stating that the examination has been taken under true examination conditions. *This form must be countersigned by a responsible party.*

Our Membership Examination requires a comparatively high standard of knowledge, and is based on the syllabus of any one of the following courses:—A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., A.M.I.A.E. The course on which he wishes to be examined may be chosen by the candidate. The Diploma of Membership is issued in the faculty of advanced Civil, Mechanical, Electrical or Automobile Engineering according to the examination chosen.

The Associate Membership Examination is based on any one of our general courses of instruction which may be chosen by the candidate. The Diploma of Associate Membership is issued in the faculty of the subjects on which the examination is based.

Where candidates feel that they have reached a suitable standard of knowledge and wish to take our Membership or Associate Membership Examinations they should apply to the Secretary for an Examination Form. This should be completed and sent to the Institute with the necessary fee. If the applicant is accepted as a suitable candidate the necessary Examination Papers, Instructions, and Declaration Form will be despatched. **IF WE DO NOT ACCEPT THE APPLICANT AS A SUITABLE CANDIDATE THE COMPLETE FEE WILL BE RETURNED.**

For candidates in the British Isles the fee for the Membership Examination is £3, and for the Associate Membership Examination £2 10s. For candidates Abroad and in the Colonies the fee for

the Membership Examination is £4, and the Associate Membership Examination £3. *All examination fees must be paid in full in advance.*

The examination fee includes the preparation and despatch of examination papers, correction of, and report on, such papers, and the issuing of our Diploma of Membership or Associate Membership to the successful candidates.

Successful candidates will also be entitled, without further fee, to the privileges offered by this Institute (Employment Services, Consulting Services, etc.) for a period of 12 months from the date on which the Diploma is awarded. (See Regulation 7 on page 63.)

Our Diploma of Membership or Associate Membership is proof that the candidate has attained a certain standard of technical knowledge, and constitutes a valuable asset to any engineer. Candidates securing our Diploma are entitled to use the abbreviated title, M.I.E.T. or A.M.I.E.T., according to the class to which they belong.

All correspondence on above matters should be addressed to Examination Department.

IMPORTANT.

Every Student successfully completing any one of our courses automatically receives our Diploma without further Examinations and free of any cost whatsoever.

Examination fees are charged only to those who take our examinations without studying under our guidance.

REGULATIONS GOVERNING MEMBERSHIP OF THIS INSTITUTE.

(1). The British Institute of Engineering Technology consists of:—

Members. Associate Members. Students.

(2). The following abbreviated titles may be used:—

Members	M.I.E.T.
Associate Members	A.M.I.E.T.
Students	Stud.I.E.T.

(3). **A STUDENT** is any person who has been officially enrolled for any Course of Instruction prescribed by this Institute and is pursuing his studies with reasonable diligence.

- (4). **AN ASSOCIATE MEMBER** is a person who has either
- (a) Completed to the satisfaction of the Board any one of our general Courses of Instruction, or
 - (b) Has passed an examination prescribed by this Institute based on the syllabus of any one of our general Courses of Instruction.
- (5). **A MEMBER** is a person who has, either
- (a) Completed to the satisfaction of the Board, any one of the following Courses:—A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., A.M.I.A.E., or
 - (b) Has passed an examination *prescribed by this Institute* based on our A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., or A.M.I.A.E. Courses.

It should be clearly understood that it is not necessary actually to pass the A.M.Inst.C.E., A.M.I.Mech.E., A.M.I.E.E., or A.M.I.A.E. Examination in order to qualify for Membership of *this* Institute. It is sufficient for the candidate to have satisfied us as to the standard of his knowledge of the subjects included in any one of these Examinations.

(6). **Students** are allowed to study at their own rate and are entitled to all privileges of Membership. Their Courses must, however, be completed within a period of five years. This understanding is necessary to restrict the period of our responsibility. The average student can complete his Course in one to two years, and accordingly the period of five years allowed is more than ample.

(7). **Associate Members and Members** are recognised as such by this Institute for life. They are entitled to the privileges of our Employment and Consulting services for a period of 12 months from the date on which their Diplomas are awarded. If it is their desire to participate in the privileges of active membership of this Institute after a period of 12 months, an annual subscription of £1 1s. will be required. It should be clearly understood that *it is not essential to subscribe yearly in this way* except where it is desired to continue to participate in the benefits of our Employment and Consulting Departments, and the usual privileges of active membership. •

Diplomas and Certificates.

(8). The Institute will issue to each Member and Associate Member a Diploma showing the class to which he belongs, and stating the subjects he has studied or in which he has been examined.

(9). Each student will receive a certificate testifying that he is an official student of this Institute and stating the Course for which he is enrolled.

(10). Where students elect to pay their fees on the instalment basis such instalments will become due and payable on the first day of each month.

(11). All Text-Books, Lessons, Instructions, etc., which are sent to the student become his own property.

(12). In enrolling with this Institute, it is understood that the student agrees to accept our advice in all matters connected with his studies and that we reserve the right to alter the curriculum or text-books of any Courses to meet any changes in official examination syllabuses, or if such alteration is approved by our Advisory Board.

FIVE MINUTES WITH OUR TUTORIAL DIRECTOR.

You will already have read of the very efficient system of tuition employed in our Tutorial Department, but perhaps a few additional comments from one inside the department will prove further our ability to help any and every one of our students, whatever their status, circumstances and previous training.

Our Tutorial Staff.

Our Tutors are not merely teachers, or instructors, in the usual sense of the word. They are men who have been "*through the mill*," and, in consequence, are able to understand the viewpoint of every class of student, whatever the branch of engineering upon which he is engaged, and to appreciate the difficulties under which he may have to study, and the obstacles to promotion and success he is bound to meet. They are men who, by dint of hard work and study, have overcome all the obstacles that beset young engineers; they have attained their academic qualifications not purely as a result of theoretical knowledge, but also on the strength of their experience in the workshops, drawing offices, laboratories, etc. They are specialists in the various subjects they are teaching, which they have studied from every possible aspect, both theoretical and practical—from the design, research, production and commercial standpoints. In addition, they have had many years' experience teaching their respective subjects by correspondence. In short, our tutors are experts and enthusiasts, perfectly fitted for their particular work.

Text Books.

We do not write our own text-books—we prefer to employ the works of the acknowledged authorities, books such as would be found in every consulting engineer's office, and as recommended by the leading Engineering Institutes. In choosing Text Books exhaustive search is made to obtain the most up-to-date, thorough and comprehensive works, regardless of their cost, and furthermore, those most suitable for adaptation for teaching by correspondence. We consider it to be futile to attempt to write better Text Books than those from the pens of men honoured throughout the world for their specialised knowledge.

By adopting this system, not only are we able to supply text-books which are indisputably the best, but we can readily change the text books employed for various Courses, to bring our Courses up-to-date, to include recent developments and current practice, and to bring them into keeping with alterations made from time to time in examination syllabuses. We do not have by us at any time large stocks of printed lessons and text-books which must be used regardless of whether they are up to the standard or not.

To take an example. If a few years ago we had printed a few thousand books in Wireless, costing hundreds of pounds, what an absurd position would result. Teaching Wireless Practice five years out of date! Our point will be quite obvious, yet such things do and are happening to-day where Colleges prepare their own text-books.

OUR LESSONS. The text-books which have been chosen with such meticulous care, are very carefully analysed and divided into a suitable number of lessons by our Tutorial Director after collaborating with specialists in the particular branches. Whilst we pride ourselves on the perfect choice of our text-books I would like to make it very clear that we set far more value on our Lessons. These Lessons are virtually the student's private tutor which he has at his elbow whilst studying; to guide and advise him; to elucidate the matter given in the text-book; to point out those passages which are of especial importance, and those which may be safely omitted; to give additional matter, worked examples, sketches, etc., where necessary, and the viewpoints and opinions of other authorities; to explain in detail any matter which our Tutors know, after many years of teaching the particular subject, is likely to present difficulty to the student; and to discuss and elucidate any points arising in the lessons of a controversial nature.

Every possible artifice is employed to make the student's studies as interesting and instructive as possible, both in the preparation of lessons and in the correction of student's homework. Our lessons

are regularly revised and re-written to introduce new ideas and to enlarge on any points which we find present difficulty to some students.

CORRECTION OF HOMEWORK. In the examination of student's homework our system is essentially one of individual attention and sympathetic consideration. The student's work is carefully examined and scrutinised—not merely corrected—and all possible hints and advice are given by the tutor to the student to enable him to improve the style and quality of his work and to increase his knowledge of the subject.

In addition to detailed comments on student's homework, an award is given for each lesson. Records are kept of the award given to each lesson, and these records are always before the tutor whilst he is examining student's work. The tutor is thus able to judge accurately and regularly the student's progress, and he can report accordingly. It is by this simple, but effective system, that we are able to give such individual attention to our students and to regulate their studies to suit their abilities. Incidentally, our *Records of Progress* are extremely useful in the compilation of reports to be sent, if required, to students' employers, prospective employers, etc. We are always only too pleased to write on students' behalf to their employers, and are regularly gratified to learn that our reports have been instrumental in gaining promotion and remunerative employment for our students.

Students are encouraged to write from time to time, with regard to their studies and to seek the personal help of their tutors on any questions arising out of their Courses. Every student thus has at his command a staff of expert tutors, whom he may consult whenever in difficulty either with regard to his studies or in connection with his every-day work, when he is sure of sympathetic and experienced guidance over the difficult places.

MODEL ANSWERS. Another feature of our Tutorial Department, worthy of special mention, is our Model Solutions! Whatever the award a student receives for his homework, he is supplied with a complete set of model solutions to every one of the questions set in each lesson, whether the answers consist of calculations, descriptions, drawings, or sketches. These model answers explain fully, step by step, every point called for in the question. They are answers such as would be expected from a candidate in an examination to gain full marks. Not only are these model answers of inestimable value as a guide to the student during his actual studies, but they become permanently the student's own property, and so can be filed with his lessons for revision purposes and future reference.

EXAMINATIONS. Particularly thorough is our system in connection with students preparing for examinations of the various engineering institutions. In the first case the text-books employed are well up to the standard of the various examinations, and are in most cases, the actual text books recommended by the respective examining bodies. Our Tutors make a special point of analysing examination papers set over a number of years, and are thus able to prepare lessons containing questions which are almost certain to appear in the examinations for which the students propose sitting. Furthermore, our Tutors give the examination student every possible hint, to help him through the Examination Room successfully. Finally, as the examination time approaches, actual test papers, such as the candidate may expect in the examination room are sent. The student attempts these test papers as far as possible under examination conditions, and if he is found wanting in any particular subject then our tutors give him intensified coaching to overcome any weaknesses.

It is upon the Tutorial Success, and Tutorial Success alone, that the success of our Institute depends. We are pledged to extend ourselves to the utmost to secure the success of every one of our students whose progress is entrusted in our hands. The many personal letters of thanks we, of the Tutorial Department, receive from grateful students, are a happy augury of the continued growth of our Institute, and a suitable reward for the help so willingly given.

TUTORIAL DIRECTOR.

A GLIMPSE INTO OUR EMPLOYMENT DEPARTMENT.

By our Employment Superintendent.

I suppose that of the thousands of engineering vacancies that occur each week 90 per cent. are, of necessity, filled within seven days. From this it will be seen that "TIME" is one of the most important factors in securing posts for our students. For this reason our Employment Organisation has been so planned that we can, if necessary, arrange for a student to be interviewing a new employer within a few hours of being notified of a vacancy.

This is the main reason why our Employment system is so immeasurably more successful than the old method of issuing a Vacancy List to students. Under present day conditions the Vacancy List System (which strangely enough is still adopted in some cases) is hopelessly out of date and misleading.

Additional Methods we Adopt.

We have no hard and fast rules in our Employment Department. We plan our methods to suit circumstances.

When occasion demands we are always prepared to telegraph to a student advising him to attend an interview with an employer.

Where a student applies for a vacancy advertised in the Press, we are always pleased to send a letter to the employer in support of the student's application. When we do this our student does at least know that his application will be sifted out and read. This is half the battle. Owing to the eminent people attached to this Institute our letter carries considerable influence, and our recommendation is a great asset. We have found this method of recommendation to be extremely successful.

We are always willing to write to the student's present employer with the object of showing that he is studying to increase his abilities. In these cases the employer invariably expresses keen interest in the student's progress. The advantage of thus gaining the employer's interest will be obvious. Note that we only write to the employer when instructed to do so by the student.

When advising our students of vacancies we receive, we make a special point of giving confidential advice as to the manner in which to approach the employer. Knowing what to enlarge upon and what to pass over in an application often makes all the difference between success and failure.

Students in India and elsewhere abroad are assisted very effectively by our Employment Department. As suitable progress is made we are always glad to use our influence in helping them to obtain good appointments in the Public Services and large engineering concerns.

Space will not permit me to cite further ways in which we assist our students to make headway. I will therefore simply repeat that we take any steps, however unusual they may be, to see that our students receive really tangible benefits from their associations with this Institute.

EMPLOYMENT SUPERINTENDENT.

As each student progresses under the hands of our Tutorial Department and becomes capable of holding more responsible positions, our Appointments Register is altered accordingly ; thus do we market our students' increasing abilities in a practical manner.

YOUR INSURANCE POLICY.

(READ CAREFULLY—*this is the most important page in the book*).

We are nearing the end of this hand-book. We have endeavoured to show how we are helping ambitious engineers in all parts of the world to qualify for and secure well paid posts.

You are now considering the matter from your own personal standpoint. Your Technical Training is a serious matter, and unless you start right, money and much time will be lost. You are probably wondering if we will carry out all our claims—whether you can entrust your training in our hands with all confidence.

The eminent men directly connected with this Institute, whose names are household words in our national life, are sufficient to indicate the stability and high standing of this Institute. Nevertheless, so that complete confidence may exist between us, we will stand by our statements in a definite manner, such as no other Educational Institute in the kingdom will do.

Here is our guarantee. So sure are we of the value and efficiency of our tuition, so sure are we that we can prepare you successfully for technical examinations, that *we definitely guarantee, under bond, to return every penny of your tuition fee if, when you have finished your course, you are not satisfied in every way with our tuition and the benefits you have received from this Institute.*

We alone Guarantee: "NO PASS—NO FEE."

Can anything be more fair? You are protected at every stage of the road. You take no chances whatsoever. You will be the sole judge as to the value of the service we have rendered to you. You alone will say whether or not you are satisfied with our tuition, and whether or not you think we have carried out the promises we make in this book. Surely this is the acid test of the supreme confidence we have in our abilities to train you successfully.

We do not simply *state* that we will return your money if you are dissatisfied, but we definitely guarantee to do so under a legal written agreement. This will show you how deeply in earnest we are in advising every ambitious engineer to place his career in our hands.

Our guarantee is an entirely unique departure in the Educational World. Never before has a Technical Institute shown such absolute confidence in their teaching methods and the general service they render. There are no restrictions at all; we simply give each student taking any course outlined in this prospectus a written guarantee that if, on completion of his course, he notifies us within ten days that he is not entirely satisfied, then his complete tuition fee will be returned to him in full, and without question.

Our guarantee form is enclosed. It is simply necessary for you to fill in your name and address and send it to us with the enrolment form. It will then be signed by the Secretary and returned to you with your first lesson work, and you will be absolutely safeguarded.

ACTION.

How has your life been moving up to now? Look back on it, and trace it from the early days up to the present time. Are you satisfied—or do you see that you have been following a slow, zig-zag, haphazard path leading to nowhere worth while?

Are you going to continue in this way single-handed and alone? Consider for a moment the odds against you—consider your position one year—two years—five years hence. Will you still be in the same uncertain, uncongenial position?

It is a hopeless task trying to reach the top without guidance; any man in a good position will tell you that his success is due mainly to the help others have given him. It is just that help that we offer to you to-day—staunch, practical help. Will you accept it? The enrolment form is ready for your signature—we are in readiness to commence work on your behalf, ready to help you, if you are ready and willing to help yourself.

Whether you are in work or out of work whether you are in a good position or a bad one, we offer you a warm welcome.

Everything is now in your own hands; it is you who must take the next step. Bear in mind the possibilities we can open up to you, and that all risk is eliminated by our *unconditional guarantee*. You have everything to gain—nothing to lose. Make up your mind, and post the enrolment form *to-night*

HOW TO ENROL.

First of all you must decide which course you wish to take. Carefully consider your past experience and training (if any) and make up your mind on the type of post for which you wish to qualify. It should not then be a difficult matter to decide.

If, however, you would like advice on the most suitable course, or would like us to help plan your engineering career, our Advisory Department is at your service. We have enclosed a special Advice Form for your convenience, and this should be filled in as fully as possible. State clearly the course or courses which appeal to you and the type of post which seems most attractive. It will *help us* also if you state frankly the amount you are prepared to spend *monthly*, and if possible the *total* amount you are prepared to pay. We simply desire this information so that we may plan your immediate studies to suit your finances. Be quite frank in the matter. The information will be treated in strict confidence.

From the information you give us we shall carefully consider all aspects of your particular case and advise you on the best steps to take.

Having definitely decided your course, you should fill in the Enrolment Form. The information on the back is required to enable us to guide your studies to the best advantage. If you desire the help of our Employment Department, the section of the Enrolment Form referring to employment should be filled in. State clearly if you require immediate employment help or whether you prefer to wait until you are qualified for a better position. Naturally, we can only recommend you for vacancies you can adequately fill.

You should also write your name and address clearly on the Guarantee Form, which will be signed by an Authorised Official of this Institute and returned to you for your safe keeping.

Post the Enrolment and Guarantee Forms to us, together with the necessary remittance, in the envelope we have provided. Immediately your forms reach us our Technical Director will decide at which point to commence you on your studies, and your first parcel of books and several lessons will be despatched with full instructions for study and for sending in homework for correction. Our signed Guarantee of "*Satisfaction or Refund of Fee*" will be enclosed with your first parcel, and you will thus commence your technical training with all confidence.

FEEES.

Where possible it is to your advantage to pay the fee for your course in one sum on enrolment, as this means a saving of money and also saves the trouble of sending instalments each month. Our fees may, however, be paid in instalments usually of 20s. or 10s. per month. The fee and basis of payment is given at the end of each syllabus outlined in this prospectus.

Where students cannot possibly manage to pay the usual instalment, easier instalments will be quoted on request. Students may pay larger instalments than those stipulated if they desire to settle their obligations quickly. In any event the basis on which the fee is to be paid should be stated clearly on the Enrolment Form.

It should be clearly understood that each student receives the same individual attention and treatment, whether he pays for his course cash in advance or in small monthly instalments.

Where a student does not enrol for a course of instruction but requires to take an examination only, for Membership or Associate Membership of this Institute, a special Examination Form should be completed. A copy will be sent on writing to the Examination Department.

NOTE.—Any of our courses may be combined at an attractive fee. Quotations will be sent on learning your requirements.

A WARNING.

In the interests of Correspondence Education generally, and in the interests of Students in particular, we hereby issue a warning against enrolling with any college or institute which is not sufficiently well established and of sufficiently high standing to carry out its obligations to its students.

The eminent men directly connected with the British Institute of Engineering Technology are sufficient assurance that this Institute can, and does, carry out its obligations to its students to the letter. Our record is one of unbroken success. Our methods are endorsed by Professional Societies and by the Press.

All students may entrust their training in our hands with full confidence, knowing that they have enrolled with an Institute of the highest influence and connections, where their studentships will be treated with the dignity and seriousness they merit.

QUALIFICATIONS OF INSTRUCTORS.

Prospective students will be interested to know that with the exception of our Courses in Iron Founding and Pattern Making which have been prepared by Mr. F. W. Nicholson, who is a member of the Institution of British Foundrymen (M.Inst.B.F.) and who is at present serving as Foundry Manager to Messrs. Sir Wm. Armstrong-Whitworth, every one of our Courses has been prepared by Instructors holding University degrees or one or more of the following qualifications:—A.M.I.C.E., A.M.I.Mech.E., A.M.I.E.E., A.M.I.A.E., A.M.I.Struct.E. It will therefore be seen that those responsible for our courses are qualified specialists.

POINTERS.

¶ The University Graduate as well as the Novice, entrusts his training in our hands.

¶ Technical College Lecturers recommend this Institute to their students.

¶ Well known firms including Leyland Motors, Ltd., Standard Telephones & Cables, Ltd., Metropolitan Vickers, Southern Railway, Great Western Railway, Redpath, Brown & Co., Vandervell & Co., Vulcan Motor & Engineering Co., George Jennings, Ltd., Red Lion Motor Spirit Co., Municipal Engineers and others, have written expressing their satisfaction that their employees have enrolled with us. Here is a typical letter:—

"We are in receipt of your letter of the 29th inst., in which you refer to one of our Fitters named W. A. Hill, of Balcarres Road, Leyland, who has enrolled as a student at your Institute to study Motor Engineering. We are very pleased to hear this and shall be glad if you will be good enough to send us periodical reports of his progress so that we know exactly what he is doing and shall be able to entertain him for higher work which he may be capable of performing in the future.

Yours faithfully,

LEYLAND MOTORS, LTD.'

¶ The phenomenal growth of the Institute has created a record in the world of Correspondence Education.

¶ During the last 12 months, up to the time of going to press every one of our Examination candidates has been successful. Not a single failure has been recorded.

The above statement will help to show why we claim the B.I.E.T. to be the leading Engineering Correspondence College in this Country. The reason for our remarkable progress may be summed up as follows:—Experienced Organisation, Expert Tuition and an intimate understanding of the Engineer and his needs.

YOU WILL NEVER REGRET ENROLLING WITH THE R.I.E.T.

