BELL PUNCH

news and views

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VOL. II. PART I. SPRING 1950

This above all ; to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man.

(*Hamlet, Act I, Scene* 3)

These words formed part of the advice given by a father to his son, about to go overseas ; the principle they speak can usefully be followed by all of us.

The success of a business does not only depend upon the quality of its work but requires the loyalty, happiness and friendliness of all who, together, work for the business and thereby for themselves.

That our Company has grown and made its progress over the years is in no small measure due to the sincere and continued interest of everyone in it, to their loyalty to the Company and to each other.

This atmosphere of co-operation is extending all over the world. The interchange of visits made possible to-day by air travel has multiplied our friends many times and has resulted in creating interest in our work everywhere.

We are fortunate in our Distributors abroad. We are rightly proud of our Company, within which we depend on each other and, if we remember always to be true to ourselves, we will find we never let the others down.

L. A. S. Phelps

Joint General Manager

news

We have been pleased to welcome to London during the past four months the following visitors from our overseas Distributors:—

Mr. J. M. MacGregor, the Principal of S.I.D.M.A.C., our Sumlock and Plus Distributors in Belgium, saw us during the last few days of October.

A few weeks later, we were glad to welcome Mr. Malliasse, Mr. MacGregor's partner, and also Mr. Bertrand, their Chief Mechanic. The main object of their visit to this country was to attend the Business Efficiency Exhibition, but they were able to spend some useful time with us.

In early November, Mr. Giger, the Chief Engineer of the Union Trading Company in Nigeria, which distributes Ticket Issuing Machines, Sumlock and Plus there, as well as in the Gold Coast, was with us for general discussions on servicing, and he was also able to see our production methods at the factory. Mr. Lewis, who was recently appointed as Chief Salesman of Sumlock and Plus for Messrs. J. A. Miller & Son in Eire, discussed with us in early November sales technique and sales promotion generally. With him was Mr. Parnell, also of that firm.

Our Sumlock and Plus Distributor in France, Mr. Y. A. Chauvin, was here in December for talks regarding future imports into that country.

We saw quite a lot of Major W. K. Wynne of Port of Spain, during December and January. He is our Distributor for Ticket Issuing Machines, Sumlock and Plus in Trinidad and British Guiana.

The Managing Director of Procento N.V., our Sumlock and Plus Distributors in Holland, Mr. H. Meulenbelt, paid us a visit for three days just before Christmas. In addition to their successful selling in Holland, Procento is making considerable strides in arrangements for marketing Sumlock and Plus in Germany and, in this respect, we wish Mr. Meulenbelt and the German sales organisation B.I.V.G. under the management of Mr. Boser, the very best of good fortune. Indonesia was also a topic of conversation, and we are sorry to have to report that Mr. D. W. Davids is no longer with Procento's subsidiary in that country.

On his way back to America from Sweden, Mr. S. V. Coates, who looks after our Sumlock and Plus interests in the Argentine, Paraguay and Uruguay, spent a few days with us in December when he was able to visit the factory for the first time.

Owing to the complete ban on imports which has prevailed in the Argentine for nearly two years now, Mr. Coates has almost exhausted his earlier stock of machines. He is, however, enthusiastic as to the future and continues to make every possible effort to obtain Import Licences. Good luck to the firm of S. V. Coates.

Burma is, unfortunately, another country where imports are at present being refused, but we are planning for the future and were particularly glad, therefore, to welcome Mr. T. Jones, Managing Director of Oppenheimers, our appointed Ticket Issuing Machine Distributors in that country.

Mr. G. Boucht's somewhat dramatic figure appeared in London during January, and he discussed with us the apparently very favourable prospects this year for the sale of Sumlock and Plus in Finland, where he is Managing Director of O.Y. BICS.

Mr. A. Napack of Venezuela visited us in January. A considerable number of additional cinemas in Venezuela will shortly be admitting their patrons with our printed tickets issued from Model " H " Machines.

Mr. L. Day, the Service Manager of Plus Computing Machines Inc., our Adding and Calculating Machine Distributors in the U.S.A., spent ten days of January at Uxbridge and with the London Service Department.

We were glad to see Mr. W. T. H. Mulford from Israel once again.

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Mr. W. B. S. Sheldon returned from his extensive trip of India, Pakistan and Ceylon by sea, arriving just before Christmas. Whilst he was away, Mr. Sheldon visited Karachi, Bombay, Calcutta, Madras, Lahore, Delhi, Secunderabad and Colombo. Mr. J. H. Somerville, Managing Director of Eastern Scales, Ltd., our Ticket Issuing Machine Distributors in India and Pakistan, travelled with Mr. Sheldon almost throughout his tour.

A sample Self-Printing Ticket Issuing Machine was flown out to India with Mr. Sheldon and was demonstrated to the Railway Board at Delhi. The Railway Board requested operational tests to be carried out, and these were successfully done at Madras and Bombay on the South Indian Railway, the Great Indian Peninsular Railway, and the Bombay Baroda and Central Indian Railway. There was also a test of the Ultimate System on the Bombay Electric Supply and Traction bus routes.

The foundations for a really extensive business for Bell Punch Cash Control Systems have been laid as a result of this tour, and we feel sure that Mr. Somerville's continued and strenuous efforts will soon consolidate the basis into complete success.

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Mr. Sheldon paid a visit of a fortnight to America immediately after Christmas and at the time these notes are being written he has just flown to New York yet again, where he is likely to remain for several weeks. As a matter of interest, we have worked out that since 1946, and exclusive of his present trip, on journeys for the Company Mr. Sheldon has travelled some 68,500 miles by air and some 13,300 by sea.

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We noted in the return of Sumlock and Plus sales by Kontormaskiner in Norway recently that a Plus Machine now finds itself in a lunatic asylum. The report does not enlighten us as to whether the user has yet become an official inmate !

In spite of considerable import difficulties, Kontormaskiner continue to make good sales progress.

From Italy we have received the highly encouraging news of an installation of 63 Sumlocks in the enormous Fiat works and this against very energetic competition. In offering our congratulations to Italcalcolo, our Italian Distributors of Sumlock and Plus responsible for this considerable achievement, we are glad to be able to say that they hold out the prospect of further installations of a like nature.

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Dansk Formulartryk, our Sumlock and Plus Distributors in Denmark, held a Sales Conference in December which was attended by Mr. O. Blomqvist of Maskinfirman Fackman and Mr. E. Hingstrom of Dakoma A.B., Distributors in their respective areas in Sweden.

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We are glad to welcome our newly-appointed Distributors of Sumlock and Plus in Singapore, Messrs. W. McMullan.

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We have received the very heartening news of an all-Australian record for tote takings through the Bell Punch Totalisator equipment at Wentworth Park, Sydney, Dog-racing Track of £37,990 on the 13th February. The contract for the installation was taken by our Associated Company, Bell Punch (A/sia) Ltd. under the auspices of its Managing Director, Mr. J. A. MacKay. Mr. MacKay has now obtained a further contract for a complete Totalisator installation with public indicators, showing odds, at Newcastle, New South Wales, which will shortly be installed. We congratulate him for these achievements particularly as they were made in the face of considerable competition from a local Manufacturer of Totalisator equipment.

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The factory is hard at work on a complete Totalisator installation for the Lansdowne Track, Vancouver, Canada, which is due to open on the 15th June next. The contract for this equipment has been obtained in conjunction with our Associated Company in the U.S.A., General Register Corporation.

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The success of an installation of 100 special Plus Machines made over the last few months of 1949 has now been confirmed by the users, Boots Cash Chemists, Ltd., Nottingham, England. The Machine consists of three Sterling 506 Machines mounted side by side in one casing with a single clearance handle, and enables the saving of over 10 per cent. of time as compared with the way in which the work it handles was formerly carried out.

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The Ultimate Ticket Issuing Machine continues to be very favourably received for City and Town work by Municipalities in this country. Liverpool Corporation, for instance, have already doubled their initial order for these Machines, and Manchester Corporation have almost done so. Other successful installations where there has been a demand for additional

exhibitions

Top Left—**Automaticket Ltd.**-Hotel and Catering Exhibition, London, February 1950

Top Right—**Procento N.V.**-Utrecht Trade Fair, September 1949

Bottom Left—**London Computator Ltd.**-Business Efficiency Exhibition, London, November 1949

Bottom Right—**Plus Computing Machines Inc.**-New York Business Show, October 1949

Bottom Centre—**Bell Punch (A/Sia) Ltd.**-Brisbane Show Autumn 1949

Machines include Wolverhampton, Southampton, Maidstone, South Shields, and Newport Corporations and the West Riding Automobile Company, Ltd.

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Automaticket, Ltd., are happy to report that their first installation of the new Bellgraphic portable receipting machines in the Bristol Co-operative Society is meeting with great success. Further orders are expected, in addition to the 300 Machines already in use.

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At the Hotel & Caterers' Exhibition held in London during February, the Automaticket Stand, pictured in this issue, created widespread interest.

Caterers were offered an inexpensive, speedy, fool-proof and labour-saving system of cash control by the use of a Model " P " on a Stand for each waitress to issue her bills or kitchen food checks, and the Analyser to handle the copies.

It is estimated that 800 demonstrations were given resulting in 250 positive enquiries and many orders.

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Among the distinguished visitors to Uxbridge Factory in recent months, a visit by Father Christmas should not go unrecorded. He arrived on Saturday, 17th December, and by a strange coincidence our Social and Sports Club were entertaining more than 400 children of employees on the occasion of the annual Party which is given by the Club each year at Christmas time.

Plenty of good things to eat and drink were provided by the Club under the skilled direction of the Canteen Manager and his efficient staff of willing helpers. The feast was followed by a special film show for which thanks were due to the Club President, our Managing Director, Mr. H. Drummond Black. The climax was reached when Father Christmas (who in private life is Mr. A. T. Chaplin, the Company's Purchasing Agent) arrived on his magic sleigh (conveniently though surreptitiously propelled by electricity) with a load of presents. The resounding cheer which shook the rafters of the Canteen upon his arrival indicated that there is nothing wrong with the lungs of the children of Bell Punch employees.

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Bell Punch will, as usual, participate in the 1950 British Industries Fair from 8th May to 19th May. The Stand will be in the Office Equipment and Machinery Section, Main Hall, Olympia and we shall be pleased to welcome there any visitors from overseas. A wide range of our products will be exhibited—including Sumlock and Plus, Model 'H'., Z.N. Punch, Model 'P' and the Ultimate in their traffic and non traffic roles.

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The Bell Punch 'World Centre' chosen for this issue is Athens, and we are most grateful to Mr. T. Spyrides, our Distributor for Ticket Issuing Machines, as well as Sumlock and Plus in Greece, for his very considerable help in compiling this section of "News and Views".

holidays with pay

by H. R. Mathieu

Export Department, Bell Punch Co. Ltd.

" Nice holiday ? " queries the Department slyly.

" Good to see you again. Thought you had forgotten about us."

The Victim, with feet but recently again on England's terra firma after weeks of flying liaison visits overseas, sighs and smiles bleakly, trying desperately to give the impression of a chap who appreciates all jokes and that this particular joke is just killing him.

Of course it is the Airline advertising and Hollywood Travellogues which must share the responsibility—flying down to the West Indies via New York—the great airliner, smooth as oil and steady as a rock ; the shapely hostesses bent on your pleasure ; a great uniformed staff of minions to fetch and carry—all eager to effect the transport of your important body in sybaritic comfort towards the Western Eldorado.

Perhaps a partial remedy for this unhappy state of affairs would be to make the Airline Companies print a list of warnings on the back of their flight folders—similar to those which appear on railway tickets ; you know the kind of thing, you read it and then understand with terrible clarity that the Railway chaps are quite at liberty to steal your trousers, send you to Canterbury instead of Crewe and run you at 70 m.p.h. into a stationary petrol tanker without incurring any legal displeasure or public odium.

The following might begin to meet the need.

" The Airline Company accepts no responsibility for :—

The premature demise of passengers through repression occasioned by interminable delays at termini of ports of call. Heart failure or permanent palpitations caused by engines popping at enormous heights and at equally enormous distances from anywhere, with or without the illumination of the " Fasten-Belt " signal.

Premature greyness or loss of (remaining) hair, brought about by circling invisible airports for no apparent reason.

Frost-bite with or without resulting loss of limbs through failure of heating system over points North of the Arctic Circle.

Extreme nervous debility induced by " Happy Passengers with Experience " discussing the latest flight disaster which they (unfortunately) just missed."

The remedy could be made complete by adoption internationally of a Travelloguers Penal Code introducing the rack and thumb screw for track chat not considered brutally objective by a Board of Hardened Travellers.

Descriptions of Paradise should include some detail of mean temperatures and a note upon the habits and incidence of insect life ; statistics regarding the average consumption of shirts and socks in the more popular tropical isles would be perhaps a barbarous commonplace, but of real value to the needy traveller.

It may be with some lack of foresight as to the progress of modern science that Cooper said :—" *To travel is one of the greatest pleasures of life* " and, given the opportunity, he might now have cause to temper his views.

Bell Punch
world centres

Athens

" Athens, the eye of Greece, mother of arts
And eloquence, native to famous wits,
Or hospitable, in her sweet recess,
City of suburban studious walks and shades;
See there the olive groves of Academy,
Plato's retirement, where the Attic bird
Trills her thick-warbled notes the summer long."

—*Milton* (1608–1674).

" We have seen some sky-scrapers—of a more modest character than those of New York, of course—overlooking the Acropolis and the Parthenon. Yet Athens remains Athens, the city of immortal memories and glorious scenery."

—*Demetrius Caclamonos* (1940).

" I'll put it this way, my child," said the Great-Authority-On, " Athens is beginning to look a bit cosmopolitan; but it's still Athens, city of the eternal individual, the birthplace of freedom, and the glory of the world." "But can you get ice-cream there ? " said the child anxiously.

John Blake (1945).

" In modern Athens there are trams and donkeys, cinemas and cabarets, tavernas and pavement cafes; there are poems and symphonies in marble—and blocks of flats; there is beauty that belongs to the past and beauty that belongs to the present; but mostly there is a vibrant people and the glorious sun."

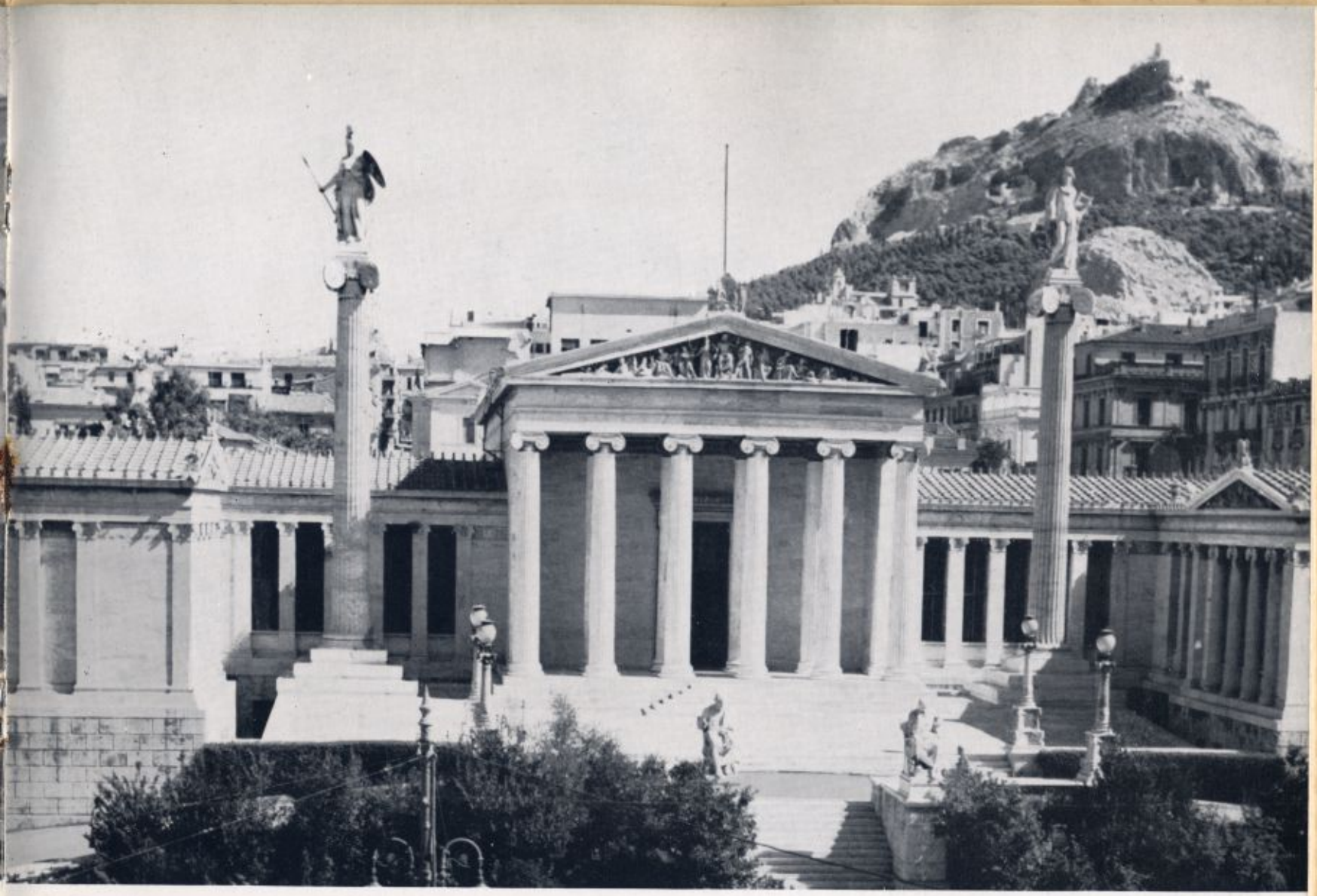
—*Yelnats Murtrab* (1949).

views of Athens

The Parthenon temple Ictinus the architect and Phidias the sculptor created this symphony in marble on the highest plateau of the sacred rock of the Acropolis. For 2,400 years the Parthenon has shouted its challenge to architects of all nations.

The Acropolis, crowned by the ruins of famous monuments of the golden age of classical Greece, towers 512 feet above Athens. The Acropolis has been in its turn both a shrine and a fortress.

The Old Royal Palace. Built for King Otho (1832–63), it is now the Houses of Parliament and General Headquarters of the Greek Army.



The Academy of Athens, one of the most beautiful buildings of modern Greece, with the monastery-crowned Lycabettus hill in the background.

A corner of the Erechtheum—or Temple of Athena. For 2,400 years these marble maidens have borne, with severe grace, the weight of the architrave on their heads. Today they are beginning to show signs of strain.

Evzones, who form the Royal Guard, salute the flag on the Acropolis Citadel. Evzone means well-girt. The origin of their costume, like the origin of Athens, is lost in the mists of time.

The Story of Rayon

by L. H. Pugh,
Director of North British Rayon, Ltd.

Nowadays there are many kinds of synthetic fibres produced by man which are rapidly taking their place alongside the natural fibres such as cotton, wool and silk that have been used since the early days of mankind.

One of the most important of these is called rayon, which is produced by several quite different processes of which Viscose, the Cuprammonium and the Acetate are the best known. Of all these types Viscose has still by far the largest output in the world.

Britain was the pioneer of the production of this yarn and the first machine to spin artificial threads was produced in Manchester as long ago as 1842, but it was not until the 1880's that the term " artificial silk " was first coined by Sir Joseph Wilson Swan. Some articles made by him from this " new " fabric were exhibited in 1885. Two of Swan's assistants, C. H. Stern and F. Topham, had a great deal to do with the development of the Viscose process and Topham's invention of the spinning box to collect the threads remains the basic principle of the spinning machine of to-day.

Many people wonder how such an unattractive raw material as wood can be transformed into delicate fabrics or stockings, and this is how it is done.

The raw material used by rayon producers in this country is not wood itself, but wood pulp that has undergone one stage of manufacture before it reaches this country. The pulp at its best is made from spruce trees, which must be of a uniform age to ensure the finest quality. The main source of supply is either Canada or the Scandanavian countries, where the trees are felled during the summer months and floated down to the pulping mills on the coast. Here the tree trunks are stripped of their bark, chipped into tiny cubes and boiled in large vats with certain chemicals to break down the woody structure to form the pulp, which resembles a thin white cardboard; it is in this form that rayon manufacturers in this country import it.

After arrival at the factory the sheets of pulp are trimmed to an exact size by a guillotine and are then stored under carefully controlled conditions of humidity and temperature so that there may be no variation whatsoever between one sheet and the next.

When conditioned, the sheets are loaded upright into a long rectangular tank, which is filled with caustic soda solution, causing the sheets to swell to many times their original size.

After some hours steeping a powerful hydraulic ram squeezes almost all the caustic soda out of the pulp and the liquor is

drawn back for re-use. The sheets of pulp are then transferred to a machine which grinds them into very fine crumbs which are called Alkali Cellulose.

This is transferred to air-tight tins and stored in a special air conditioned chamber at a controlled temperature for a definite time, during which the caustic soda still present is at work gradually breaking down the cellulose. Ultimately the contents of the tins are placed into large hexagonal churns, where a measured amount of carbon bi-sulphide is slowly and carefully added. The churning continues for several hours until the bi-sulphide amalgamates with the cellulose to form a bright orange putty-like mass called Cellulose Xanthate.

When the churning is completed the Cellulose Xanthate is poured into jacketed tanks and dissolved in a weak solution of caustic soda to form the spinning solution which is now known as Viscose. Before the Viscose is used it is blown by compressed air through a series of filter presses to remove all foreign matter and particles of wood pulp which may still be present. It is then allowed to ripen under carefully controlled conditions and during the last 24 hours of this process it is subjected to a vacuum treatment to remove all traces of air.

The spinning process is probably the most interesting stage. The liquid Viscose is pumped through nozzles made of precious metal, such as Tantulum or Platinum, which is drilled with a number of almost microscopic holes, all exactly equal in diameter. The liquid Viscose is forced through these holes into an acid bath, which has the effect of co-agulating it into a number of fine filaments, each filament corresponding to a hole in the nozzle. The output of each nozzle is gathered together to form a thread and it is led along under the surface of the bath through guides until it is completely set, when it passes over glass rollers into a rapidly rotating pot. The thread is thrown onto the inside of the pot by centrifugal force and, at the same time, the rotation of the pot puts a slight twist on the yarn which has the effect of holding the filaments together. The yarn forms a definite cake on the inside of the pot and when it has been filled to a sufficient degree, this cake is turned out. Before it can be used the excess acid and surface impurities must be removed, and the yarn given a finish.

To protect it during this stage it is usual to wrap the cake in a tube of stockinette.

The cakes are loaded into a finishing machine, divided into various zones ; the first zone is of clear water for removing acid and surplus impurities ; the second zone gives a treatment with bleach to remove sulphur from the yarn, then follow other zones for further cleansing, from which the yarn eventually emerges wet but otherwise finished. Finally the cakes are placed in a special drying chamber to remove all moisture and afterwards in a conditioning room so that they may regain a carefully controlled moisture content. After inspection and grading the yarn is ready for despatch to the various users.

These fall roughly into two main categories, knitting and weaving, although there are a great many other outlets for it which are rapidly growing in importance, such as covering electric wires, elastic thread and corset manufacturing, braids, ribbons, lace curtains, shoe laces, the manufacture of gas mantles and a special type of rayon yarn is also being used in large quantities for the manufacture of tyre fabrics.

PRODUCTION—
the approach to the Problem

by G. H. Allen

Production Engineer, Bell Punch Co. Ltd.

Production Engineering is an interesting profession widely varied in its employment. Despite the extensive range of products manufactured within the engineering industry, the fundamentals of production remain the same. From Toy-making to Turbines, from Pottery to Plastics (probably second cousins) and Calculating Machines to Coal Cutting Machinery, in all of these variations within industry, the Production Engineer plays his part. With the essential knowledge of how to produce a product, his ultimate aim is to co-ordinate the efforts of others in order to obtain maximum efficiency, output and quality of product at an economical manufacturing cost.

The British Machine Tool Industry is well to the fore in design and new techniques. Close attention is paid to the rigidity of the modern Machine Tool to allow for the maximum loading with safety and efficiency, with accent upon accuracy, surface finish and speed of operation. Air and hydraulically operated Machine Tools are commonplace throughout the industry, and the practical application in the electronic field is going rapidly ahead.

Allied closely with the manufacture of Machine Tools, the makers of Cutting Tools have made a remarkable advance in theory and design. Feeds and speeds are to-day, with the introduction of the Negative Rake Angle being achieved which a few years ago would have been deemed impossible.

Assembly shops are by no means forgotten in the continual search for improved machinery and equipment. Mechanical Handling Devices of all descriptions play an important part from Assembly line to Packing Department.

With the basic information of the number of articles to be produced, each product is studied as to its suitability of design for economical production. Then is determined the material requirements, the method of manufacture, the application of the available machine tools and equipment, the need for new plant and equipment, and the tooling expenditure. The summation of these facts leads us to the final manufacturing cost of the product.

Our own particular products fall into three categories ; one, large quantity productions (as distinct from mass production), two, medium, and three, small quantity productions. The large quantity productions are the Sumlock, Plus, and Ultimate, and the Roundsman Machine. Because of their multiplicity, certain parts lend themselves to mass production in the Machine Shop. Totalisator T.I.M's and Municipal T.I.M's come under the heading of medium quantity productions and both the large and medium quantity productions are built on the Line Assembly method. Totalisator Equipment and the remaining Bell Punch products come under the heading of small quantity production and are each treated on merit.

With all these resources from which to draw and with the backing of a progressive management, it is not surprising that we in Uxbridge have a factory of which we are justly proud.

Off the Assembly Line

by B. Boylett

Assembly Shop Manager, Bell Punch Co. Ltd.

Most of our readers know something of the 70 years of Bell Punch history, but it is perhaps not commonly appreciated that for nearly 50 years we had little engineering activity beyond the Conductors Punch and the special printing plant for ticket production.

By joining the Company in 1921, I have been privileged to see the whole of the phenomenal expansion of the mechanical side of our business and take a responsible part in most of its varied productions.

It was between 1925 and 1930 that our trend commenced towards Control apparatus for other purposes besides transport, these systems being sometimes associated with the use of tickets and sometimes independent of them, beginning with the electrically released Ticket issuing machine for Totalisators, and continuing through Taximeters and Calculating machines to the highly specialized Control equipment and Navigation instruments which we developed and manufactured during the war.

An indication of the growth of our mechanical production is reflected in the use of springs. Prior to 1934 few springs were used and these were purchased from other firms. In 1934 we added a section to the Assembly Department to produce our own, and today make and assemble something like 50,000 a week.

The responsibility of an Assembly Manager for the final stages of our productions has not been easy in the years of supply difficulties. One of his ears is always occupied listening to the demand for deliveries, while the other is hearing the reason why certain materials or parts for which he is waiting cannot be obtained till next week.

Looking back, however, troubles diminish rapidly in retrospect and one realizes that the interest of the journey of life is largely in the people one meets on the way and, of course, there have been many in nearly 30 years. There is the recollection of our Managing Director, as self-appointed Clerk of Works during the building of our front office, pointing out with his stick just how that corner should be finished off, and a few years later holding up the progress of a new factory building because a robin had nested there and was found sitting on her eggs.

Then there was the old servant who, after many years at the bench became too old to carry on, and yet, when it became necessary to suggest his retirement, was much distressed and said that if he had known it was not a permanent job he wouldn't have started.

In more recent times there was the colleague who at the end of the war received a letter from the Prime Minister about a decoration, and was more concerned than if it had been an income tax demand.

We are thankful that Bell Punch lives not only in its factories and products, but in its people.

Leather

by Edward Carter,
of John Carter & Sons, Ltd.

Ever since man emerged from the Garden of Eden and evinced a desire to cover his nakedness, leather has played a prominent part in his life. Although in the most primitive times leather was probably little more than untanned skins used for clothing, yet it is recognised from the most ancient records that the art of tanning was practised.

For instance it is now known that Babylonia was an important centre of leather production. In the New Testament we are told in Acts IX 43, that St. Peter retired to the house of " one Simon a Tanner " in Joppa. And so the story goes on to modern times. From the dawn of civilisation man has depended on leather to produce articles so dissimilar as a pair of moccasins to a suit of armour, or a wine bottle to belts for driving machinery.

In modern times its uses are even more multifarious. Apart from the more obvious footwear, upholstery, luggage, saddlery, book-binding and leather belting, it also has many vital industrial uses. The " picker " in power looms must be made of it. In the world of sport it has a vital place too ; where otherwise would the footballs and cricket balls come from ?

The basic raw material of the tanner is, of course, the hide of an animal and his first consideration is to select the most suitable type for the particular kind of leather he wishes to produce.

Thus, for the soles of shoes, where considerable substance and hard wearing qualities are desirable, an ox or cow hide is used. For upholstery, where considerable area and flexibility are required, a split cow hide fits the picture. In this case, the hide at a certain stage in the tanning process is actually split through its centre into two parts by a high precision machine, as in its original state it would be far too thick for upholstery purposes. Kid and lamb skins are suitable for glove making. Calf skins are used for the upper leather of boots and shoes.

Just as different hides are required for different leathers, so also are differing tanning and finishing processes employed.

The period taken to tan a hide varies enormously. It may take up to two years to tan a walrus hide owing to its great thickness. Whilst on the other hand, it takes only a few hours to chrome tan a goat or sheep skin. The two main tanning processes are vegetable and chrome.

To-day, vegetable tanning is generally used by the heavy leather tanners. That is to say, those making sole or belting leathers. As its name implies, this process involves the use of a variety of vegetable matter, amongst which are Sumach—the leaves of a tree grown in Sicily, Valonia—acorn cups from Asia Minor and Greece and the bark of English oak. These materials have the tannin extracted from them by soaking in water.

Before tanning can begin, much work must be done on the hides. The first part of the process is to soak the hide in water for a day or so to remove salt, dung, blood and flesh.

It is then put in a lime liquor and left for from 7-10 days. This loosens the hair which is then removed either by hand or by machine. The surplus flesh and fat is next removed and again this may be done either manually or mechanically. The best fleshing is done by hand.

After this has been carried out the hide is cut up, or " rounded," as it is called. This is done to a pattern and consists of cutting off the shoulder, the side edges which would normally cover the belly of the animal and which are known as " bellies."

What is left is called the " butt " and constitutes the best part of the hide. The tanning process can now begin.

This consists of placing the butt in progressively stronger tanning liquors. The time taken to tan a butt will vary considerably from tannery to tannery and also with the weight of the butt. The thicker the butt, the longer it takes to tan, but on average, in a modern tannery, the period will be approximately 30-35 days, whilst in an old-fashioned oak-bark tannery—where incidentally the best quality leather is produced—the time may be anything up to 9 or 10 months.

The " offals," that is to say the bellies and shoulders, are treated similarly, but weaker liquors are used and the time is shorter. When the tanning process is complete the finishing processes or " shed " work are carried out. These consist of scouring to remove bloom which certain vegetable tanning materials deposit on leather, something like the " bloom " on a grape. If this is left on the " grain " or hair side it will spoil the colour of the finished leather. The goods are then partly dried and then " set." This is done by a machine and the object is to remove " growth " marks in the hide. They are further dried and rolled with a pressure of approximately 2-3 tons per square inch. This compresses the fibres in the leather and makes it firm. The leather is again further dried and then rolled again, anything from 5-15 tons of pressure per square inch being used according to the type of roller used and the purpose for which the leather is required. The leather is then placed in a stove heated to 95° F. and left for a day or so to remove all surplus moisture and is now ready for the warehouse.

The above is a very brief sketch of the general principles of vegetable tanning. The other main method—Chrome tanning —is principally used for calf, sheep and goat skins.

In this case, the initial processes such as soaking and liming are in principle the same as for vegetable tanned leather. The tanning liquors, however, are prepared from a mineral—one of the various salts of chromium. The skins are placed in a drum with the chrome liquor and the drum is slowly rotated for a few hours, at the end of which time they are tanned through. After this they are dyed and finished according to requirements.

Leather has certain properties peculiar to itself. Because of its fibrous nature it can be made amazingly supple or as hard as bone ; it is ideal for footwear as it possesses sufficient porosity to permit evaporation of perspiration from the feet, which property no substitute possesses ; it can also possess astonishing strength.

Indeed, it may well and truly be said " There is nothing like leather."

Received Safely

by H. J. Todd

Stores Manager, Bell Punch Co. Ltd.

The effective control of the functions of a Stores Department in any sizeable Factory must of necessity create many problems in regard to the reception, storage, issuing and finally the packing and despatch of the finished products to our customers. This is particularly so when the raw materials used are as diverse in character and volume as hundreds of tons of reels of paper on the one hand and multifarious shapes, sizes and types of metal stocks on the other, and when the variety of manufactured products range from millions of tickets to quite large engineering and electrical equipment, such as Totalisators.

The thought and ingenuity of the designer of the product, the skill of the production engineer, the craftsmanship of the mechanic and the rigorous final series of tests applied by the inspector, all of which have combined to produce the perfect machine, would be of little avail if the product were not so packed as to be received at its destination in perfect condition.

The energies and experience of the Packing and Despatch Section are directed exclusively to this end. Our machines must be packed in such a manner as will ensure not only that they are received without damage to the mechanism caused through severe handling, but that there has been no deterioration due to the climatic conditions in transit. A good deal of most useful experience was gained during the war in regard to the packing and despatching of goods to tropical countries.

The method of packing a Sumlock machine for export will provide a good example of our methods. In the early days of production, we experimented with corrugated cartons, but could not get a satisfactory bearing to hold the machines in place. We then tried a carton with a moulded fitment, but this was not practical, owing to the liability of dust and spurious material from the moulding getting into the machine.

Finally, we adopted the present method of packing in an oil-lined shell with felt-lined battens to support the base and shaped corner pieces to hold machines in position. Accessories are packed in with machines so that they can do no damage.

The shell is then screwed down and wrapped in paper sealed with gummed tape to keep out dust. Finally, they are packed in cases containing four to six shells and floated in wood-wool to absorb shock. It can be added that this method not only ensures safe transit but the shell provides packing for onwards transmission from the distributor to customer.

The reward for all the thought and skill required in handling the manifold products which flow unceasingly from Uxbridge Factory is summed up in the two small but significant words, which appear with gratifying regularity in acknowledgments : " Received Safely. . . ."

"number please?"

by Mrs. E. Punnett

Telephone Operator, Bell Punch Co Ltd.

" Bell Punch Company, Good morning ! "

The first call to-day is received on the direct line linking Head Office and Uxbridge and, over the distance separating us, I can sense the beehive activity of the Factory. Uxbridge is calling the Shipping Department—" You're through "—and the morning's work is begun.

It is not overfanciful to liken the telephone switchboard to the life pulse of the Company. Local calls, calls to Glasgow or any other of our twelve branches, a talk with " Taximeters ", Isaac Warwick, " Computator " or Automaticket, to Uxbridge, to one of our thousands of customers, to someone in another room in the same building, to New York—" the call is booked for 3 o'clock prompt "—Yes, all sorts of conversations go through the switchboard.

The small opportunity for respite is amply rewarded by an endless scope for vivid imagination.

How commonplace is the telephone and yet how fascinating it is to let your mind dwell on the thousands of miles of cable over land and on the impenetrable seabed, the radio links and endless network of lines that will presently transmit the speaking voice from Sydney to London and back, more clearly, probably, than the very next call from " 39 " to the City.

The switchboard is an unpleasantly utilitarian object and yet it is the means of acquiring a vast number of friends or at least telephone voice acquaintances to whom one endeavours to attach features, personality and surroundings.

London Office is constantly in touch with New York, Paris, Australia and the voices of the Distributors and members of their staffs in all parts of the world become familiar over the international lines.

I spent several years on the Trunk and International Exchange in Faraday Building, London, not only putting through and connecting long distance calls but also dealing with bookings and charging. During the war this Exchange was responsible for the sounding of Air Raid sirens after we had received warning direct from the Air Ministry. This was interesting work but it was entirely impersonal ; working the switchboard at Bell Punch is happily essentially a personal matter.

It may be interesting to know that approximately two hundred calls are handled daily through my switchboard at Head Office. There is nothing extraordinary about this and many operators, no doubt, handle far more, but there is one essential difference which affects us all and that is, of course, that they are all calls to, from and within Bell Punch—an infinite number of enquiries, difficulties presented, snags, orders, even cancellations and, as a result of them all, action will eventually be taken in such a way as amply bears out our policy—" Bell Punch serves the World "

BELL PUNCH COMPANY LTD., 39 ST. JAMES'S STREET, LONDON, S.W.1

CABLES: BELPUNCH, LONDON

Made and Printed in England

Printed by the Chaseton Press of H. Williams & Son Ltd., London W.C.1. Designed and Produced by Alfred Pemberton Ltd., Incorporated Practitioners in Advertising.