

All Sorted in Bygone Days

Slide charts do not enjoy the same rich history as slide rules. They are also too often underrated.

Slide Rules versus Slide Charts

With other variants, slide rules and slide charts are analogue calculating aids. It is open to debate but for me to be considered a slide rule, the calculating aid must at least have a pair of logarithmic scales capable of doing multiplication and division. This means by its nature, a slide rule is a general-purpose calculating aid that can solve various mathematical problems. By comparison a slide chart mostly provides the solution or answer to a specific problem or task.

Slide charts are considered a “modern” development. However, examples of paper slide charts, called volvelles or wheel charts, go back to the 12th century [1]. However, when cheap sheet plastic and inexpensive printing techniques became readily available in the 20th century, the market for slide charts really took off – outstripping and outliving the slide rule. Finally an enduring trait most slide charts have over any slide rule is that they intuitively show a pictorial-style solution to a problem without the user ever needing to know anything about any underlying formulas or values involved in the implicit calculation.

Bygone Days

The days of filling the reservoir of a fountain pen with permanent blue-black Indian ink or receiving a handwritten letter in the post is largely a thing of the past. I still use a fountain pen to at least “top and tail” letters I post to friends and family. The unstoppable digitisation that took hold in the second-half of the 20th century had a profound and detrimental impact on the need and nature of the mail service to private homes. Perhaps the abandonment of what was once the cornerstone of everyday life, “the arrival of the morning post”, is best characterised by the terminal downfall of the modest postcard. At their popularity peak in the 1930’s, sixteen million postcards were being sold and posted annually in the UK alone. The comic series of saucy postcards created by Englishman *Donald McGill* (1875–1962) was largely responsible for past popularity and affection for the postcard in Europe. Although frowned upon as poor taste in the conservative 1950’s, the liberal revival of the 1970’s and 1980’s ensured McGill’s creations were rightly reinstated in popular

opinion as fine comic artwork [2]. So much so, a museum on the Isle of Wight, UK is dedicated to McGill and his postcards.

In bygone days sending a postcard home was part of being on holiday. If not one of McGill's creations it was a postcard of a famous local landmark or a seaside view. However, by the end of the 20th century to take advantage of the lower postcard postal rate, any greeting was limited to a maximum of 5 words. How many remember getting around this limit by drawing a sun or some raindrops to convey the prevailing weather alongside the "*wish you were here*" message? Also in bygone days two deliveries of mail a day to all homes was common place. However, in some countries so little correspondence is now being sent by "snail mail", the home delivery service is, or soon will be, down to *two deliveries a week*. Ironically the

arbitrary postcard limit on the number of written words has a modern day equivalent. The tiered postage rates, now popular in many countries, charge according to a maximum weight *in grams* and the maximum overall dimensions allowed for the item being posted!

Delivering the mail used to be a full-time job with exacting obligatory levels of service efficiency. Postmen¹ were not only seen as "flag bearers" of the company but they also fulfilled a secondary unofficial role as a "social worker" for the inhabitants and traders living or working in the area covered by their round [3, 4]. So in the past being a postman was a highly sought-after and respected profession. Certain standards had to be continually met including the smartness of the uniform, demeanour when dealing with the general public and *timekeeping* [4]. In the pre-digital dominated age, an army of postal workers was needed to ensure the timely weekday delivery of our mail. In The Netherlands this prompted the design of a novel post-related slide chart. Like many countries the Dutch Post Office (PTT or "Posterijen, Telegrafie en Telefonie") used to be a nationalised public company. Its roots go back to 1799 but in 1915 it



Fig. 1: An example of McGill's 12.000 comic innuendo-filled postcards [2]

¹ "Postmen/Postman" in this context is considered generic and covers both genders.

became the PTT and responsible for the postal delivery, telegraphy, telephony and broadcasting. In the 1980's privatisation of the various divisions started. A trend repeated in most other countries. By 1990 the PTT was completely privatised [5].

Need for a PTT Slide Chart

For much of the 20th century Dutch postal workers started their shift by hand-sorting the letters that had arrived overnight in their local village or town post office. Once sorted, they delivered all the items of post for their allotted round. However, they were expected to meet certain time-related efficiency standards for both sorting and delivering the mail. Moreover

inspectors from the PTT's head office in The Hague would roughly visit all post offices every six months for "time-and-motion" checks. The inspectors used stopwatches to check the sorting and delivery times achieved by the postal workers. Many of the efficiency targets the postmen had to meet were bespoke calculations based on data inspectors would have to look up in a set of

cumbersome official company tables [4]. Around 1950 someone at the PTT had the bright idea to design the handy easy-to-use slide chart shown in *Fig. 2* to replace carrying around all the tables and simplify the calculations. The slide chart is unbranded but from its ALRODEREN² construction it was made by the Dutch maker **ALRO** [6]. Using the slide chart made it much quicker and easier for inspectors to make sure every post office in Holland met the required national sorting and delivery efficiency levels.



Fig. 2: ALRO plastic Ø 16.5 cm Time and Motion efficiency slide chart for the National Post Service in The Netherlands

² Trade-marked process of laminating sheets of paper between two thin layers of PVC.

Any slide chart cleverly simplifies a complex calculation or saves trawling through lots of data or both, before displaying the result(s) through one or more strategically placed windows. This usually involves initially setting the slide to certain values or positions so that with a simple look-up process the result(s) are displayed in the window(s). The single-sided plastic *PTT Slide Chart* with a square transparent backing plate consists of two scales around the circumference. The **black** outermost largely linear scale has divisions from 1 to 1000 items of post. The **red** linear scale next to it is no longer legible³ but by deduction each of the 100 divisions represents 10 metres, making the longest possible delivery route 10 kilometres. The rest of the data corresponding to the company tables is "hidden" under the white portion of the rotatable top circular disc. Each of the **two** colour-coded result windows exposes a row of efficiency targets:

1. LOCAL SORTING & DELIVERY EFFICIENCY TARGETS

Based on the number and type of letters, the target times in minutes allotted to pre-sort and deliver them locally.

2. SPECIFIC DISTANCE-BASED DELIVERY EFFICIENCY TARGETS

Depending on the form of transport, the target time in minutes allotted to complete a delivery round of a given distance.

How to use the PTT Slide Chart

From the style and form of the prominent PTT logo (see *Fig. 2*) on the front, the slide chart dates from 1950 to 1957 but may have stayed in use for much longer [7]. Sadly all the parts printed in **red** ink, including the data "hidden" under top circular disc, are badly faded and now mostly indistinct. So to improve legibility and make it easier to explain how the slide chart was used, I have enlarged both colour-coded result sections. Understandably on the original everything is in the Dutch language. In the enlargements all the original text is translated.

Of the two, the results section in **black** is more complex and extensive. It is calibrated to show in minutes 5 different efficiency targets for sorting and delivering locally a batch of letters. Pre-printed under the results window is the benchmark efficiency targets for a batch of 100 letters (see p/100 on *Fig. 3*). To find the prescribed efficiency targets for a given batch size of letters, the black arrow ➡ needs setting to the batch size number on the outermost 1-1000 scale.

³ Fading was, at this time, a notorious problem when using red coloured ink [6].

In the worked example shown in *Fig. 3* the batch size chosen is a token **80** items. The left most "PREPARATION" block is for pre-sorting the

letters ready for delivery. The two "NORM" efficiency targets in the light-grey coloured results window are **13** and **12 minutes**. The "360" column is the time allotted for sorting non-standard or oversized envelopes. The 400 column is the time allotted for sorting standard or common-sized envelopes. The central block

refers to the combined time allowed in minutes to sort and deliver a batch of registered letters (REG) or periodic mail (PER) and junk mail (BULK) - in this example, **98 minutes**. The far right column shows the local delivery time targets for 80 items after sorting. The **26-minute** efficiency target "PER BIKE" looks odd alongside the **18-minute** target for "ON FOOT". But back in the 1950s almost every household received several letters most weekdays. So nipping between neighbouring houses on foot took less time than constantly having to go back and re-park a bicycle [4].

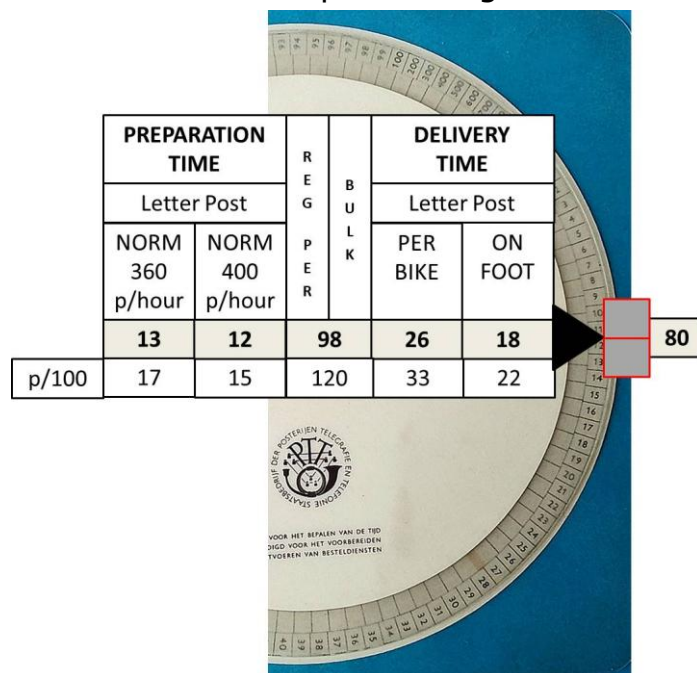


Fig. 3: Efficiency targets for batch of 80 letters

Most mail deliveries were not local to the corresponding post office. The results section in **red** is specifically for determining the efficiency targets in minutes to complete a delivery round using one of three modes of transport. The length and number of the delivery rounds depended on the part of the country and if it was a rural or urban area. The baseline benchmark is again pre-printed under the results window and this time is identical with the longest round possible with this slide chart – 10 Km (see *Fig. 4*). To find the prescribed efficiency targets expected to complete a round of a given length, the red arrow ➡ needs setting to distance on the 10 Km scale next to the outermost scale.

In the worked example shown in *Fig. 4* the distance chosen is **850** or 8½ Km. The light-grey coloured results window shows just three efficiency targets. These correspond to the three possible modes of transport. The **68-minute** result in the left-most column is for using a "BOX BIKE". These days such bicycles are known as cargo bikes and are commonly used for transporting several kids at once. Back in the 1950s this would have been 2 or 3-wheeler bicycle with a large box for carrying copious volumes of post [4]. The middle column shows **51 minutes** for completing the round on a conventional bicycle with panniers. The last **99-minute** efficiency target is for completing the 8½ Km round on foot.

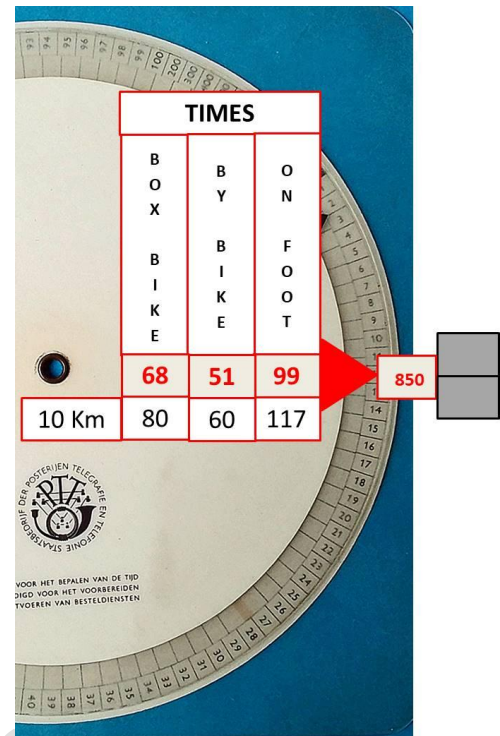


Fig. 4: Efficiency targets for a delivery round of 8½ Km

End of an era

The deceptively simple-looking *PTT Slide Chart* made looking up the prescribed efficiency targets easy. The clever and effective way it works is why such calculating aids became so popular. Sadly its purpose is now just a nostalgic reminder of a past era. For members of *Generation Alpha* (people born 2013-2025) and certainly for members of *Generation Beta* (people born 2025-2039) the idea of writing a letter by hand and having it hand delivered by a postal service will be an archaic and probably incomprehensible concept. Nevertheless the efficiency slide chart for the now defunct Dutch postal authority shows the versatility of this type of inexpensive calculation aid and why the slide chart outlived the slide rule.



Acknowledgements & Bibliography

I am grateful to fellow villager and retired Dutch postal worker **Roel van Leeuwen** for sharing details of his daily working life as a postman for over 25 years. I needed Roel's inside knowledge to understand why the *PTT Slide Chart* was needed and how it was used.

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