Ninety Years of the Journal – Part 2

Simon Moorhead
Telecommunications Manager

Abstract: The *Journal* revisits an historic paper from 1974 that reflects on the centenary of the formation of the Society and its associated Journal. Five historic technical papers from the 19th century, reproduced in 1974, have also been extracted.

Keywords: History of Australian Telecommunications, The Telegraph Electrical Society of Melbourne, The Postal Electrical Society of Victoria, *Telecommunication Journal of Australia*.

Introduction

In 1974, the Telecommunications Society of Australia celebrated its centenary and that prompted this historic paper from Sander (1974), which summarised the formation of the Society and reproduced many pages of the original proceedings of the Telegraph Electrical Society of Melbourne and the Postal Electrical Society of Victoria. The author has catalogued the key milestones in telecommunications globally and in Australia; and overlayed the milestones in the development of the Society up to 1959. The timeline predates the introduction of paging and satellite communications and the later rollout of email, cellular and computer networks. Today we have the technologies of digital cellular, mobile Internet and social networking in most places in Australia.

The historic paper included reproductions of the proceedings of the Society and early administrative information, namely minutes of meetings and office holders, which were covered in Part 1 (Moorhead, 2025). Of particular historical interest are the technical reports in these proceedings; five have been extracted here for the reader's benefit. All the other administrative pages have been removed in this reproduction of the historic paper, in the interests of highlighting the five technical papers.

The first paper, entitled "Novel Telegraphy in Canada", was published in 1876. It perceptively described Dr Bell's invention of the telephone as "very satisfactory" and "[it] will certainly be the greatest mechanical discovery since the telegraph".

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The second paper, entitled "Extermination of the Kelly Gang", was published in 1880. It described two Posts and Telegraph personnel who attended the siege at Glenrowan. One bravely climbed a pole while bullets were flying to establish a telegraph connection to Melbourne, and the other relayed continuous updates on the situation.

The third paper, entitled "Telegraphing the St. Leger, 1874", documents the incredible number of telegraphic messages sent between the premier St. Leger horse race in Doncaster UK and the press in Fleet Street.

The fourth paper, entitled "Speed of Working the Morse Instrument", discussed the top speed of Morse messages on the busiest telegraph lines in New York, USA. Not to be outdone, the Victorian operators covering the Melbourne Cup demonstrated they could send messages at double that speed.

And the fifth and final paper, entitled 'Fighting by Telegraph', was published in 1880. It is a curious article describing the fighting by operators over telegraph lines, before reliable duplex systems were introduced.

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The Historic Paper

Centenary of Telecommunication Societies in Australia

J. E. SANDER, B. Eng. (Hons.), Teknisk Licentiat (Stockholm).

The first known Australian society to specifically cater for telecommunications interests was called the Telegraph Electrical Society. It was formed in Melbourne, in August 1874, by an enthusiastic group of officers of the Victorian Post and Telegraph Department, and flourished well for a number of years. Unfortunately after 1881 interest in Society activities apparently declined and no records beyond that year can be located.

In 1908 a new society called the Postal Electrical Society was formed which had as its first president Mr H. W. Jenvey, one of the foundation members of the original Telegraph Electrical Society. After some difficult years, including a re-formation of the society in 1932, the Postal Electrical Society survived until it became the Telecommunication Society of Australia in 1959.

In this centenary year of 1974 a selection of some of the very interesting original papers and records of these early societies has been reprinted here (in the original typescript wherever possible) for the enjoyment of modern readers.

INTRODUCTION

One hundred years ago in August, 1874, a group of officers of the Post and Telegraph Department, Melbourne, founded a society called "THE TELEGRAPH ELECTRICAL SOCIETY". The purpose of the Society was stated to be . . . *"The promotion of the knowledge of electricity, especially as connected with telegraphs"*.

The Society was energetic in its early days and regularly published a little booklet called 'Transactions' to record its activities. The name of this booklet was later changed to 'Journal' of the Society, and, as can be seen from the extracts shown in the accompanying figures, it was similar in many ways to the present Telecommunication Journal of Austraia. In Figs. 1 to 9 are photocopies of the cover and the first group of pages of the very first issue of the 'Transactions' of the original Society. Figs. 2 and 3 describe the society's rules and give a list of the society's officers and members in those eary days.

It is very interesting to compare these rules and other aspects of this original Society with the present-day Telecommunications Society of Australia. In spite of the differences in size and state of technological development, the basic objectives and the functioning of the Telegraph Electrical Society of 100 years ago were remarkably similar to Telecommunication Society activities in 1974.

BRIEF HISTORY

The original Telegraph Electrical Society after its very good beginning apparently flourished from 1874 to about 1881 when Volume 19 of the Society's Journal was published covering the period January – December, 1881. Unfortunately no further papers relating to the Society can be located. (See Refs. 1 and 2.)

On 11 November, 1908 a new society called the Postal Electrical Society of Victoria was formed, and a paragraph from the first part of the inaugural address of the chairman of the new Society, Mr. H. W. Jenvey (who was a surviving member of the original Telegraph Electrical Society) is given below.

. . . . "We have to consider what is really the object of forming a P & T Society. In the first place there must be solid co-operation in order to keep it alive. Members should prepare papers and present them for discussion at the meetings regularly and give encouragement to those who contribute papers. The motive of the Society should be to improve the knowledge of the Officers — there is ample scope for study in our business without going outside the Telegraph and Telephone service. The field of study is not only Electrical. It is too often thought that knowledge of Electricity and Electrical laws is sufficient to fit an officer of this Branch for his duties — but that is not the case — that fact is becoming more widely recognised in all Electrical Engineering concerns, whether Private or Governmental. Before a person can deal satisfactorily with and solve Electrical Engineering problems, whether Telegraph or Telephone, he must be fortified with

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sound general knowledge. Knowledge of Electrical laws itself is not sufficient, he must have a knowledge of things which are taught in schools and universities — without that knowledge he will always find himself deficient. Then again outside the field of Electrical Engineering comes Mechanical Engineering which is so closely allied to it. In this service technical men should have a sound and solid knowledge . . . . "

The next part of this interesting address, which is still very relevant to the conditions of today, is unfortunately lost. In Fig. 10 a photograph of Mr. H. W. Jenvey is reproduced from Ref. 1. The photograph also shows the other original committee members of the Postal Electrical Society in 1908.

At a later stage apparently the society once more ran into difficult times and it was again reformed in 1932. Part of the inaugural address given by Mr. H. P. Brown, MIEE, Director-General of Postal Services on 12.12.1932 at that re-formation is given below:

. . . . "I assume that the activities of the Society will be related almost exclusively to the subject of communications, embracing of course, all the ramifications of technique, traffic organisation, finance, and economics, and it may be appropriate therefore, if I submit some observations on this interesting branch of commercial enterprise.

The advancement of all forms of communication in the last twenty or thirty years has been phenomenally rapid, and there are few civilised people in the world today who are really isolated — cut off from contact with the outer world. The world has become to this generation comparatively small. Distances as measured by the time to traverse them have contracted out of an earlier recognition. The knowledge of things and current happenings beyond our immediate environment is comparatively extensive and comprehensive and contrasted with 30 years ago the change is almost staggering.

The reason for this vast transformation is to be found in technical development, which has revolutionised the art of communication and led to the establishment of intercommunication with almost every part of the earth.

It is an astounding fact that there is not a square yard of the earth's surface over which are not passing messages, news, music and information of all kinds in such a form that it would be simple to detect and make intelligible to any or all with the desire and interest to provide one or other of the well-known means of radio reception. These radiations are all-pervading; they are to be found in every locality, whether during day or night; their existence is more continuous even than the sunlight, which is restricted in its incidence over every part of the earth's surface to only a proportion of the hours of the day."

Mr. H. Brown (later Sir H. Brown) retired from the Post Office in 1939. .

On October 19, 1959, the Postal Electrical Society of Victoria was re-constituted as the Telecommunication Society of Australia, and there has been little change except general growth since that date.

In Figs. 11 to 17 are published photocopies of some further extracts of the original Telegraph Electrical Society Journal which it is felt may be of interest to readers of today.

MILESTONES

The following list of milestones has been assembled to show the relationship of the Telecommunication Societies in Australia to interesting dates in the development of telecommunications technologies.

?B.C. : First optical telegraphy (arm-waving, signal fires and smoke signals).
1753 : Multi-wire electro-static telegraph system suggested by unknown "G. M." in Scots Magazine.
1786 : Continuous electric current discovered by Luigi GALVANI
1794 : Multi-wire spark telegraphy developed by Reisser (or Reusser)
1805 : Multi-wire electrolytic telegraphy proposed by Salva
1820 : Multi-wire telegraphy using suspended magnets by Andre AMPERE
1825 : Electromagnet developed by William STURGEON
1831 : Electromagnetic telegraphy using coded signals by Joseph HENRY
1832 : Single-wire telegraphy proposed by Samuel MORSE
1838 : Morse code invented by Samuel MORSE
1843 : U.S. Congress voted funds for Baltimore-Washington telegraph line
1844 : Baltimore-Washington telegraph line demonstrated successfully
1850 : Morse code systems in widespread use
1853 : Duplex telegraph system proposed by Wilhelm GINTL
1858 : Machine telegraph system using perforated tape proposed by WHEATSTONE
1872 : First overland telegraph line in Australia opened between Darwin and Adelaide. See Refs. 4, 5, 6 and 7.
1872 : Telegraph communication established between Australia and England
1873 : Radio wave theory developed by James Clark MAXWELL
1874 : TELEGRAPH ELECTRICAL SOCIETY formed in Melbourne
1876 : Telephone invented by Alexander Graham BELL (See Fig. 12)
1878 : First Australian telephone exchange opened in Collins St., Melbourne (See Ref. 3).
1879 : First London telephone exchange opened
1880 : First official telephone exchanges opened in Australia at Brisbane, Sydney and Melbourne.
1887 : Radio waves produced in laboratory by Heinrich HERTZ

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1896 : First patent on radio by Guglielmo MARCONI

1908 : POSTAL ELECTRICAL SOCIETY formed in Victoria

1914 : First automatic telephone exchange in Australia at Geelong

1923 : First radio broadcasting licence in Australia to station 2BL Sydney

1923 : Television systems demonstrated by BAIRD (U.K.) and JENKINS (USA)

1932 : POSTAL ELECTRICAL SOCIETY re-formed in Victoria

1936 : First Television broadcasting service in world inaugurated by BBC London.

1956 : Television broadcasting service inaugurated in Australia

1959 : TELECOMMUNICATION SOCIETY OF AUSTRALIA formed from Postal Electrical Society of Victoria

PREVIOUS HISTORICAL ARTICLES IN TJA

Two articles describing some of the early history of telecommunications societies in Australia were published in 1938 and 1939; see Refs. 1. and 2.

An excellent description of early telephony in Victoria was published in 1962 in Ref. 3.

Good descriptions of the overland telegraph line between Darwin and Adelaide were published in Refs. 4, 5, 6 and 7.

ACKNOWLEDGEMENTS

The co-operation of the Library of the Royal Society of Victoria; Mr. Ron Anderson A/g Deputy Principal Librarian of the State Library of Victoria; The Mitchell Library of New South Wales Mr. J. Olsen, Historical Officer, Public Relations Office, P.M.G. Department N.S.W.; and Mr. N. Ross, Secretary of the Telecommunications Society of Australia, in making available their valuable copies of the early publications referred to in the above article is most appreciated.

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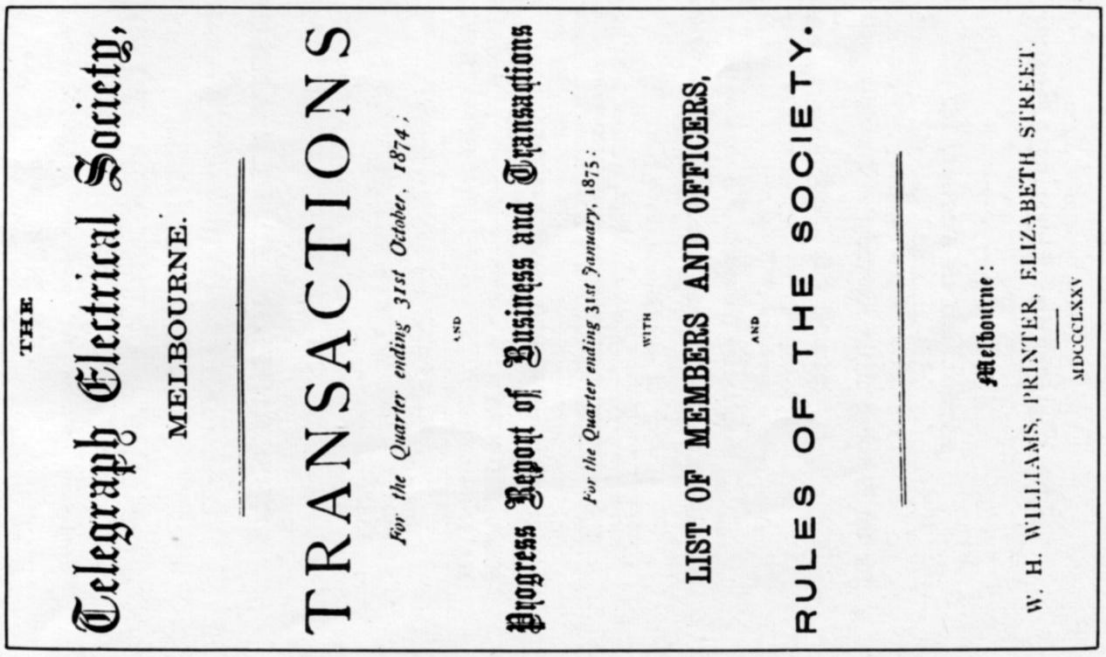
THE
Telegraph Electrical Society,
MELBOURNE.

TRANSACTIONS
For the Quarter ending 31st October, 1874;
AND
Progress Report of Business and Transactions
For the Quarter ending 31st January, 1875:
WITH
LIST OF MEMBERS AND OFFICERS,
AND
RULES OF THE SOCIETY.

Melbourne:
W. H. WILLIAMS, PRINTER, ELIZABETH STREET.
MDCCCLXXV

Fig. 1 – Front Cover of First Publication by Telegraph Electrical Society, 1875

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J. E. SANDER joined the Postmaster-General's Department in 1943. He graduated from the University of Western Australia with First Class Honours in Electrical Engineering in 1957, and later, in 1964, travelled to Sweden for two years where he studied telephone switching system design. In 1966 he was awarded the degree of Teknisk Licentiat from the Royal Institute of Technology (K.T.H.) Stockholm. Since 1966 Mr. Sander has worked on telephone system design and regional network planning, and recently he was promoted to the position of Deputy Assistant Director-General, Postal Planning, APO Headquarters.

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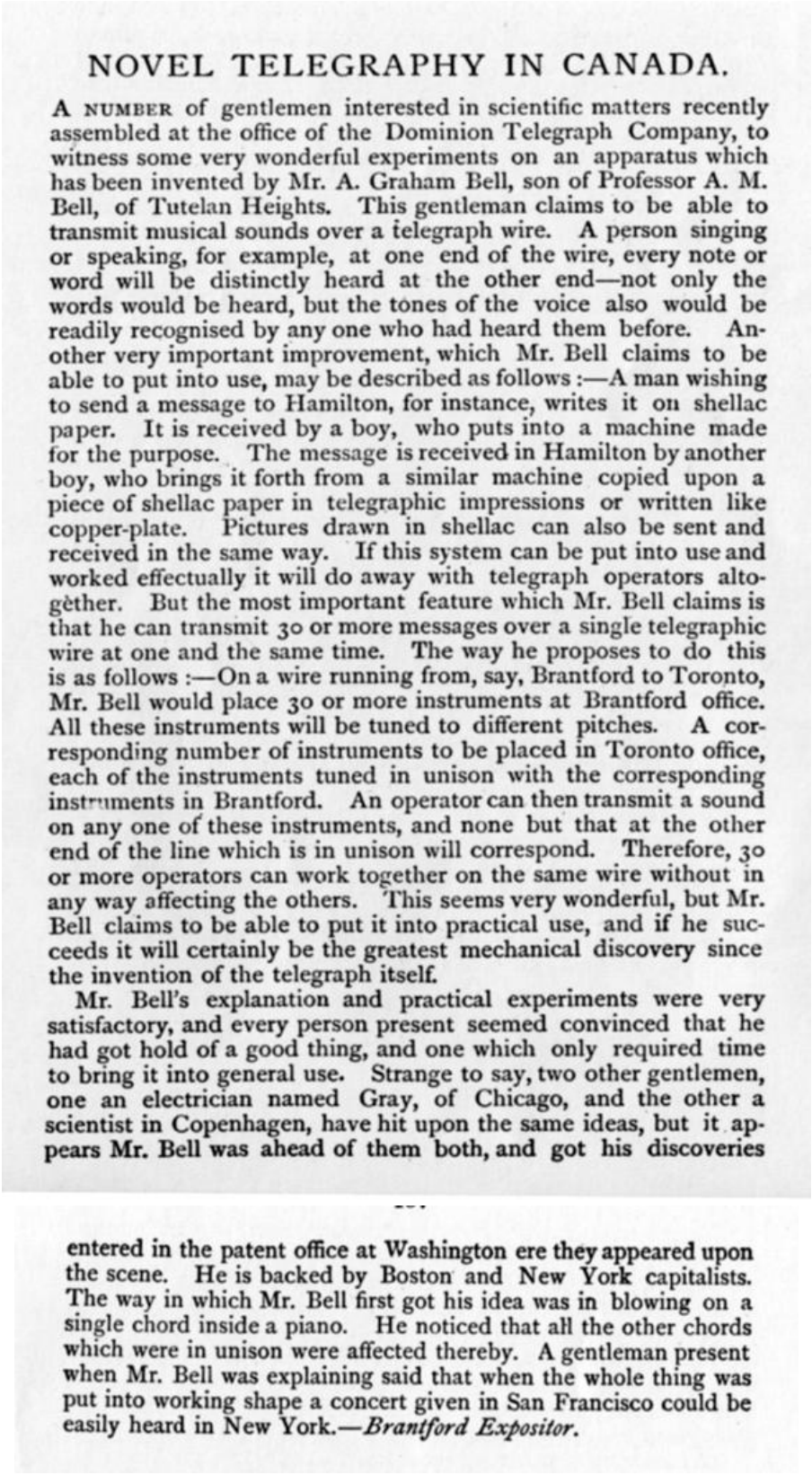
Some of the earlier papers reproduced in 1974

Figure 12 (p. 190). First Mention of Telephone, 1876 [originally in two columns].



NOVEL TELEGRAPHY IN CANADA.

A NUMBER of gentlemen interested in scientific matters recently assembled at the office of the Dominion Telegraph Company, to witness some very wonderful experiments on an apparatus which has been invented by Mr. A. Graham Bell, son of Professor A. M. Bell, of Tutelan Heights. This gentleman claims to be able to transmit musical sounds over a telegraph wire. A person singing or speaking, for example, at one end of the wire, every note or word will be distinctly heard at the other end—not only the words would be heard, but the tones of the voice also would be readily recognised by any one who had heard them before. Another very important improvement, which Mr. Bell claims to be able to put into use, may be described as follows :—A man wishing to send a message to Hamilton, for instance, writes it on shellac paper. It is received by a boy, who puts into a machine made for the purpose. The message is received in Hamilton by another boy, who brings it forth from a similar machine copied upon a piece of shellac paper in telegraphic impressions or written like copper-plate. Pictures drawn in shellac can also be sent and received in the same way. If this system can be put into use and worked effectually it will do away with telegraph operators altogether. But the most important feature which Mr. Bell claims is that he can transmit 30 or more messages over a single telegraphic wire at one and the same time. The way he proposes to do this is as follows :—On a wire running from, say, Brantford to Toronto, Mr. Bell would place 30 or more instruments at Brantford office. All these instruments will be tuned to different pitches. A corresponding number of instruments to be placed in Toronto office, each of the instruments tuned in unison with the corresponding instruments in Brantford. An operator can then transmit a sound on any one of these instruments, and none but that at the other end of the line which is in unison will correspond. Therefore, 30 or more operators can work together on the same wire without in any way affecting the others. This seems very wonderful, but Mr. Bell claims to be able to put it into practical use, and if he succeeds it will certainly be the greatest mechanical discovery since the invention of the telegraph itself.

Mr. Bell's explanation and practical experiments were very satisfactory, and every person present seemed convinced that he had got hold of a good thing, and one which only required time to bring it into general use. Strange to say, two other gentlemen, one an electrician named Gray, of Chicago, and the other a scientist in Copenhagen, have hit upon the same ideas, but it appears Mr. Bell was ahead of them both, and got his discoveries entered in the patent office at Washington ere they appeared upon the scene. He is backed by Boston and New York capitalists. The way in which Mr. Bell first got his idea was in blowing on a single chord inside a piano. He noticed that all the other chords which were in unison were affected thereby. A gentleman present when Mr. Bell was explaining said that when the whole thing was put into working shape a concert given in San Francisco could be easily heard in New York.—*Brantford Expositor.*

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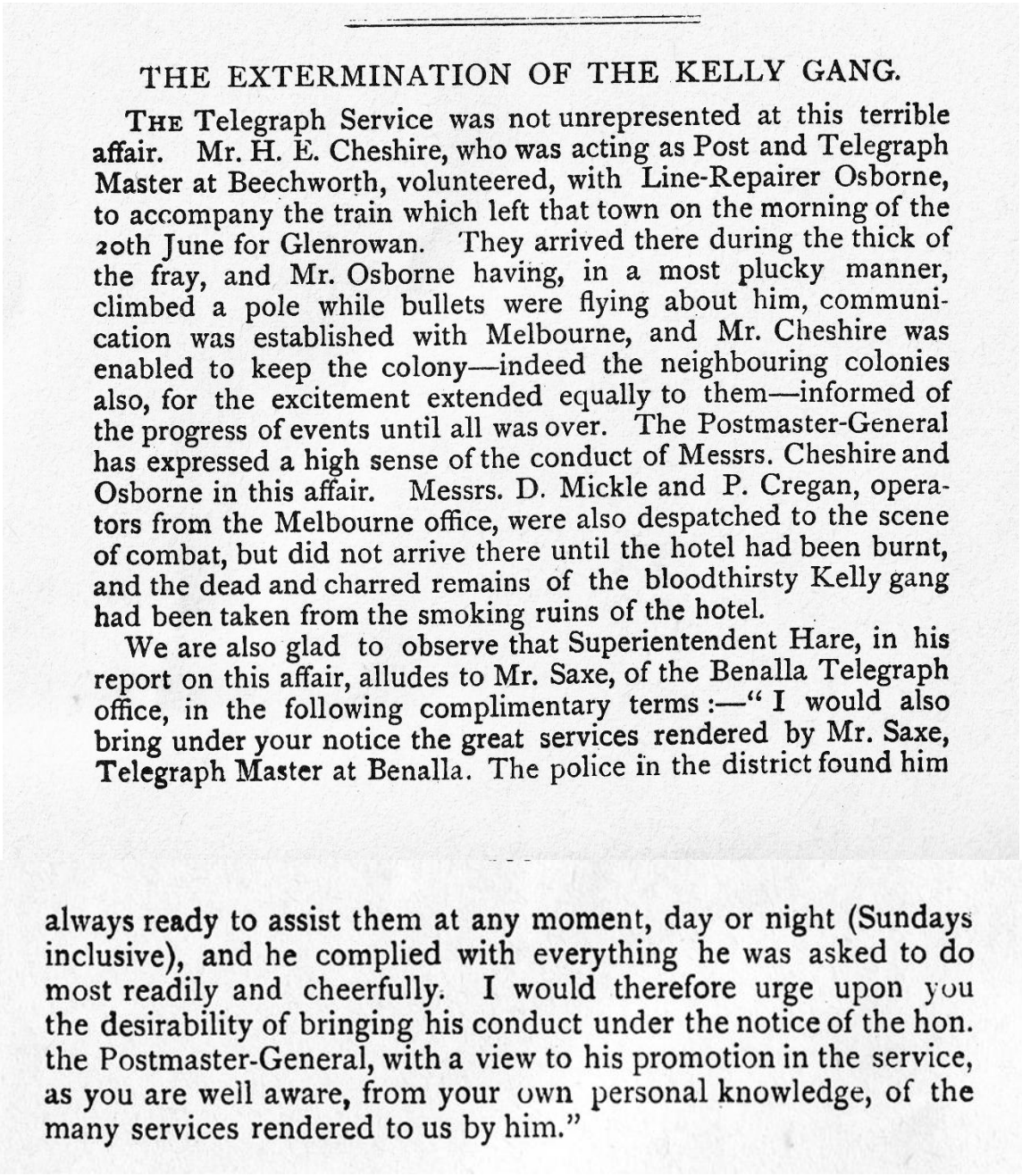
Figure 14 (part only, pp. 192–193). Some Interesting Extracts from the T.E.S. Journal of 1880.



THE EXTERMINATION OF THE KELLY GANG.

THE Telegraph Service was not unrepresented at this terrible affair. Mr. H. E. Cheshire, who was acting as Post and Telegraph Master at Beechworth, volunteered, with Line-Repairer Osborne, to accompany the train which left that town on the morning of the 20th June for Glenrowan. They arrived there during the thick of the fray, and Mr. Osborne having, in a most plucky manner, climbed a pole while bullets were flying about him, communication was established with Melbourne, and Mr. Cheshire was enabled to keep the colony—indeed the neighbouring colonies also, for the excitement extended equally to them—informed of the progress of events until all was over. The Postmaster-General has expressed a high sense of the conduct of Messrs. Cheshire and Osborne in this affair. Messrs. D. Mickle and P. Cregan, operators from the Melbourne office, were also despatched to the scene of combat, but did not arrive there until the hotel had been burnt, and the dead and charred remains of the bloodthirsty Kelly gang had been taken from the smoking ruins of the hotel.

We are also glad to observe that Superientendent Hare, in his report on this affair, alludes to Mr. Saxe, of the Benalla Telegraph office, in the following complimentary terms :—"I would also bring under your notice the great services rendered by Mr. Saxe, Telegraph Master at Benalla. The police in the district found him always ready to assist them at any moment, day or night (Sundays inclusive), and he complied with everything he was asked to do most readily and cheerfully. I would therefore urge upon you the desirability of bringing his conduct under the notice of the hon. the Postmaster-General, with a view to his promotion in the service, as you are well aware, from your own personal knowledge, of the many services rendered to us by him."

Note: Ned Kelly was a notorious Australian bushranger. In the early morning of 28 June 1880, there was a shoot-out at Glenrowan between police, who had arrived by train, and the Kelly "gang". By later in the day, all members of the gang were dead or in custody. Ned Kelly himself was severely wounded, but survived to be put on trial. After conviction, he was executed (McQuilton, 1979).

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Figure 11 (part only, p. 189). Extract from T.E.S. Journal, Vol. 2, 1875 [originally in two columns].

TELEGRAPHING THE ST. LEGER, 1874.

LARGE as is the business of the Telegraph Department in connection with the race meetings of the United Kingdom, that transacted at Doncaster during the past week fairly eclipsed anything ever attained before. Last year, when close upon 13,000 messages were forwarded and received during the four days of the meeting, including 4,000 on the St. Leger day, it was thought that an outside limit had been reached, for on no previous occasion had anything like that number been realised in so short a time. But last week the total number for the four days reached the astounding figure of 16,500 messages, being an average of more than 4,000 a day; while on Wednesday 6,144 were forwarded and received between the town and Grand Stand offices. Of the total number forwarded, close upon 1,500, containing upwards of 110,000 words, equal to sixty columns of the *Times*, were sent on behalf

of the press; while not far short of 250 were sent to the continent and abroad. There were just under 4,200 messages for delivery to such vague addresses as the "Grand Stand," the "Betting Ring," &c.; and on the huge board where the messages are displayed until called for by their owners as many as 400 might be seen at one time on the St. Leger day. The ground and passages were strewn with empty envelopes; and on no previous occasion has anything like the number of messages arrived at a racecourse for delivery to their somewhat erratic addresses as on Wednesday week at Doncaster.

The scene at the telegraph counter immediately after the great race almost baffles description. The Post Office had advised the senders of "result" messages to be prepared with stamps, or stamped message forms, in advance; and so largely had this advice been followed that several hundred messages were thrust at the clerks through the small pigeon-holes within a few minutes of the decision of the St. Leger. Within about half an hour, not far short of a thousand messages had been thus handed in; and inside the office, after the din and confusion outside had subsided, some dozen or more instruments might be heard clattering away with their never-wearied tongues of steel. London, Manchester, Leeds, Sheffield, Newcastle, Edinburgh, and Glasgow were all being communicated with simultaneously from the Grand Stand; and throughout the meeting as many as four wires were worked to the central station in London, and two to Manchester. Naturally, there was some little delay on Wednesday, from the simple fact that more messages were handed in at one time than the wires could possibly carry. But within two hours of the decision of the race—viz., at 5.35—the office was practically clear of work, notwithstanding that upwards of 2,500 messages had been disposed of since its opening, about noon. Inside the office there was just as much regularity and method as there was din and confusion outside; and the only incident which momentarily distracted the attention of the clerks was the tumbling of a man through the skylight, who had presumedly got up there for the purpose of handing in a message, so as to avoid the crush at the counter.

At Doncaster a staff of twenty-eight clerks and nine messengers was employed, in addition to the ordinary staff of the office, which numbers five clerks and four messengers. The Wheatsone system of working was brought into extensive operation, and the working power of the office would be equal to that of about fifteen or sixteen ordinary wires. The arrangements were, as usual, in the hands of the special staff attached to the chief office in London, assisted by contingents from Manchester, Liverpool, Leeds, and Birmingham.—*Times (London)*.

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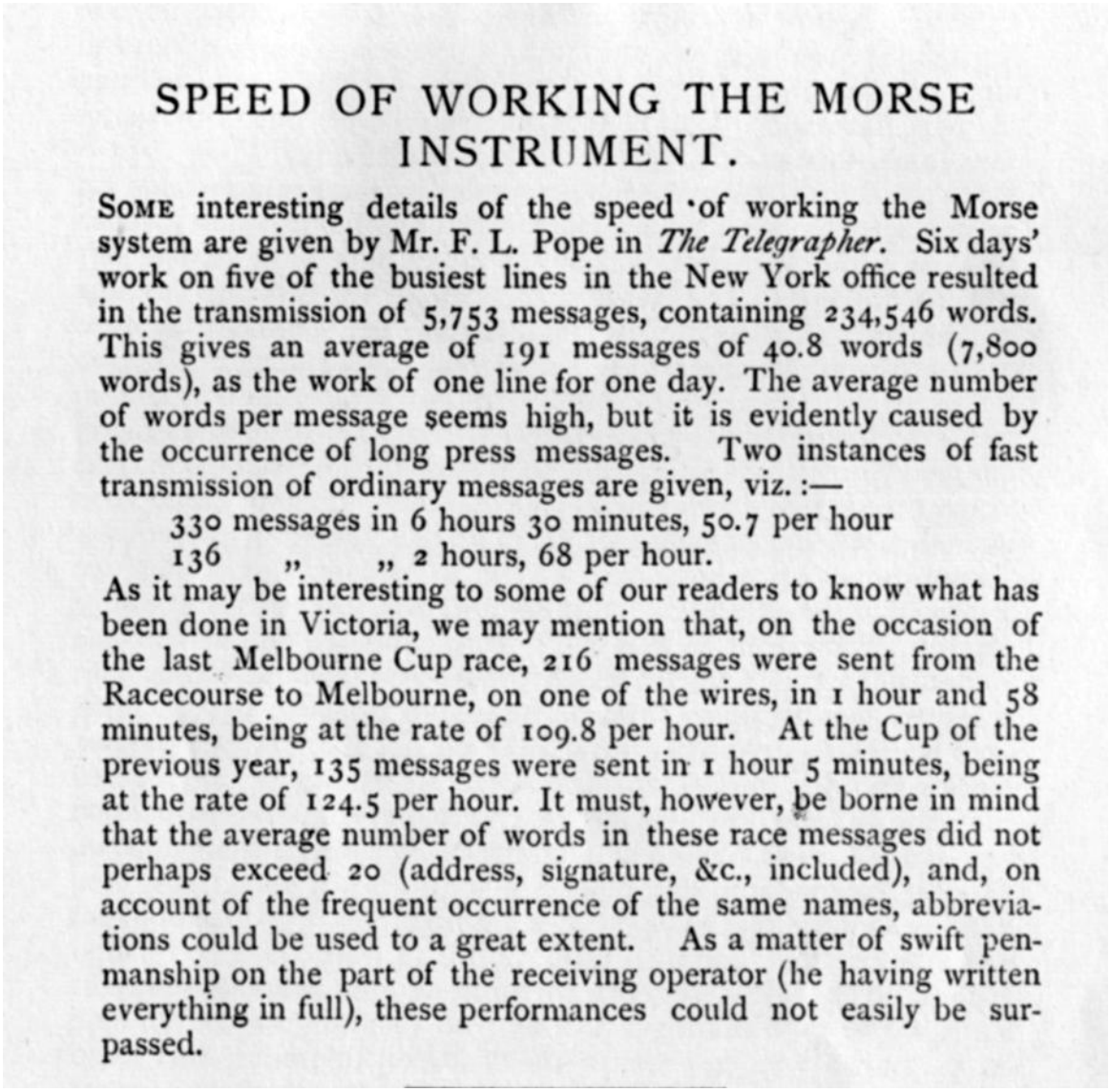
Figure 11 (part only, p. 189). Extract from T.E.S. Journal, Vol. 2, 1875.



SPEED OF WORKING THE MORSE INSTRUMENT.

SOME interesting details of the speed of working the Morse system are given by Mr. F. L. Pope in *The Telegrapher*. Six days' work on five of the busiest lines in the New York office resulted in the transmission of 5,753 messages, containing 234,546 words. This gives an average of 191 messages of 40.8 words (7,800 words), as the work of one line for one day. The average number of words per message seems high, but it is evidently caused by the occurrence of long press messages. Two instances of fast transmission of ordinary messages are given, viz. :—

330 messages in 6 hours 30 minutes, 50.7 per hour
136 „ „ 2 hours, 68 per hour.

As it may be interesting to some of our readers to know what has been done in Victoria, we may mention that, on the occasion of the last Melbourne Cup race, 216 messages were sent from the Racecourse to Melbourne, on one of the wires, in 1 hour and 58 minutes, being at the rate of 109.8 per hour. At the Cup of the previous year, 135 messages were sent in 1 hour 5 minutes, being at the rate of 124.5 per hour. It must, however, be borne in mind that the average number of words in these race messages did not perhaps exceed 20 (address, signature, &c., included), and, on account of the frequent occurrence of the same names, abbreviations could be used to a great extent. As a matter of swift penmanship on the part of the receiving operator (he having written everything in full), these performances could not easily be surpassed.

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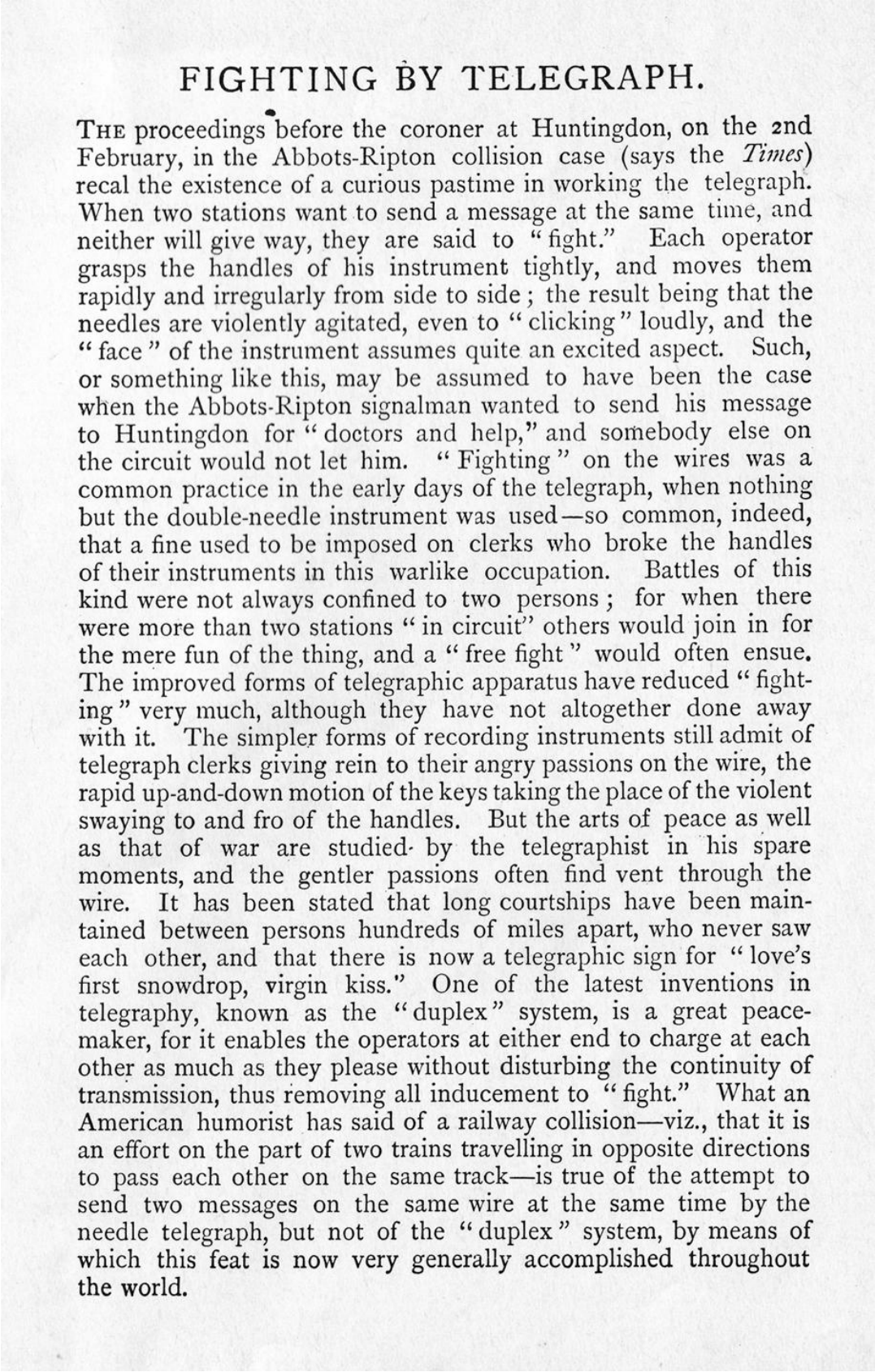
Figure 15(i) (p. 193). Fighting by Telegraph, 1876.



FIGHTING BY TELEGRAPH.

THE proceedings before the coroner at Huntingdon, on the 2nd February, in the Abbots-Ripton collision case (says the *Times*) recal the existence of a curious pastime in working the telegraph. When two stations want to send a message at the same time, and neither will give way, they are said to "fight." Each operator grasps the handles of his instrument tightly, and moves them rapidly and irregularly from side to side; the result being that the needles are violently agitated, even to "clicking" loudly, and the "face" of the instrument assumes quite an excited aspect. Such, or something like this, may be assumed to have been the case when the Abbots-Ripton signalman wanted to send his message to Huntingdon for "doctors and help," and somebody else on the circuit would not let him. "Fighting" on the wires was a common practice in the early days of the telegraph, when nothing but the double-needle instrument was used—so common, indeed, that a fine used to be imposed on clerks who broke the handles of their instruments in this warlike occupation. Battles of this kind were not always confined to two persons; for when there were more than two stations "in circuit" others would join in for the mere fun of the thing, and a "free fight" would often ensue. The improved forms of telegraphic apparatus have reduced "fighting" very much, although they have not altogether done away with it. The simpler forms of recording instruments still admit of telegraph clerks giving rein to their angry passions on the wire, the rapid up-and-down motion of the keys taking the place of the violent swaying to and fro of the handles. But the arts of peace as well as that of war are studied by the telegraphist in his spare moments, and the gentler passions often find vent through the wire. It has been stated that long courtships have been maintained between persons hundreds of miles apart, who never saw each other, and that there is now a telegraphic sign for "love's first snowdrop, virgin kiss." One of the latest inventions in telegraphy, known as the "duplex" system, is a great peacemaker, for it enables the operators at either end to charge at each other as much as they please without disturbing the continuity of transmission, thus removing all inducement to "fight." What an American humorist has said of a railway collision—viz., that it is an effort on the part of two trains travelling in opposite directions to pass each other on the same track—is true of the attempt to send two messages on the same wire at the same time by the needle telegraph, but not of the "duplex" system, by means of which this feat is now very generally accomplished throughout the world.

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