

IRON, INTRIGUE AND INTIMACY



John C. Nash

When my wife Amelia and I travelled to Edinburgh on October 31, 1895, it was so I could participate in an engineering meeting of my railway clients. Little did I realize that this trip would be the start of a year in which the world of iron, steel and steam would collide with that of a criminal plot, overlaid with a delightful new dimension of partnership, collaboration and sharing with Amelia.

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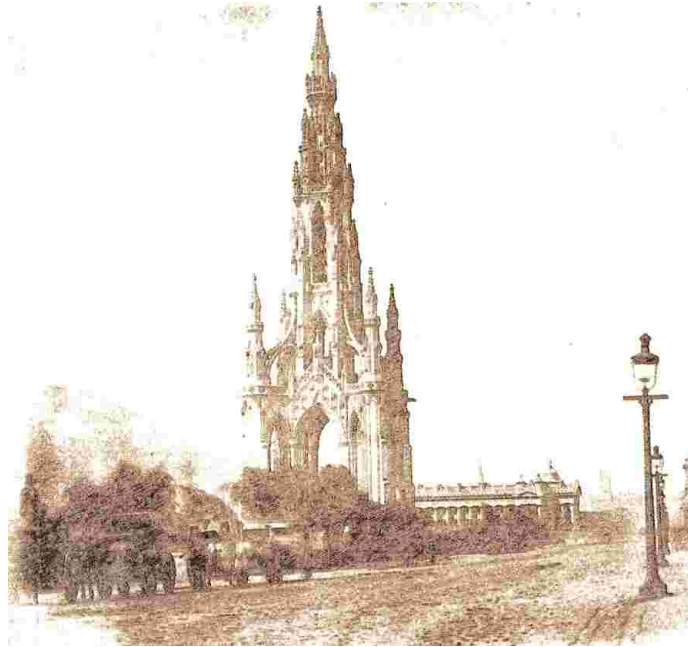
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November 1, 1895



Sir Joseph Pease, Chair of the North Eastern Railway, called us to order at 2 o'clock on November 1, 1895. We were meeting in a hotel in Edinburgh in a room that usually would serve for private dinners.

I had been invited – though it was essentially a command – to attend this special meeting of various men who served the NER and its Great Northern Railway partner. We were to discuss what, if anything, should be done in reaction to the October 22 disaster at Montparnasse Station in Paris. Unfortunately, a train that was possibly going too fast, and whose Westinghouse brakes had failed, did not stop at the end of the line, instead traversing the concourse and leaving the front of the station to end with the locomotive front bogies on the pavement below. There were injuries and fatalities. The GNR and NER were concerned that either there were faults in the Westinghouse brakes, which could affect their trains, or that there might be malicious activities afoot.

My own role was as a consulting engineer, but I gained a premium on my fees for working exclusively for the GNR and NER in the railway sphere of my work, which was largely related to calculations

pertinent to mechanical objects – bridges, boilers, cables, girders, and so on. My modest company – myself and a couple of others – did well by being good at getting the numbers correct and quickly. Whether I was well-suited to the current meeting, I did not know.

There were about 20 of us in the room. I was acquainted with most of them, having crossed paths over a couple of decades of work related to different engineering projects. They were mostly good engineers, though a couple were, I feared, likely to err towards profit rather than safety, if serving one meant the other could not be realized.

Before the meeting started, Pease had come over to greet me. As we shook hands, he whispered “Stay behind after the meeting. I’ve an important matter to discuss with you, and you alone.”

During the meeting, which consisted mostly of aimless speculation concerning either malicious agents or failures of American engineers, my thoughts were mostly occupied with what Pease wanted to talk to me about. At about 4 o’clock, there was a hiatus in the discussion when the clink of teacups was heard in an adjacent room. Pease said “Gentlemen, I think we might stop here. Mr. Rushbrooke has, I believe, taken notes and will write a précis of our deliberations. I thank you all for your participation. Please submit your expenses, and as appropriate your invoice for fees, to Mr. Rushbrooke and you will be compensated accordingly. There are refreshments in the adjacent room.”

The NER was well-known for outstanding refreshments, and the men in the room exited with almost indecent haste. I trailed the mob and closed the door behind the last of them.

“What did you wish to talk to me about, Sir Joseph?”

“Well, Carr, you’ll have noticed that our esteemed colleagues managed to use a great many words to say what I’m sure they know we have already considered. However, Rushbrooke’s report will serve to give us a measure of protection, or at least evidence that we tried to anticipate negative events, should something untoward happen.

“However, I and my corresponding number at the GNR, Mr. Jackson, feel we would like to know what the true dangers are, and whether they are due to saboteurs, engineering failures, or human stupidity. We think you have the range of knowledge and good sense to investigate this for us. If you are willing, we will pay you for six months of your time plus all expenses, and we will instruct our

employees to give you full cooperation. We would like a report on what you feel are the real matters that could cause our passengers and staff to be hurt or killed. Secondly, we would ask you to note avoidable risks to our profitability, but only AFTER you have considered safety.”

“I will have to make sure our firm can give you the time you request, Sir Joseph, but I applaud your objective, and can say I think it a worthy one.”

“When can you give us an answer on your availability?”

“We plan to be home in Tunbridge Wells by Sunday night, so I’ll be able to talk to my colleagues Monday. I was talking with McNaughton, one of the men here, about the Forth Bridge, and he has offered to give me a tour tomorrow. That actually could be a useful introduction to your project. In any event, you should have my answer Wednesday. Should I have obligations that prevent me giving you my full attention for six months, do you wish me to suggest alternative possibilities?”

“That would be disappointing, but it would likely be sensible to consider reasonable amendments to our schedule. I should add that there have been one or two hints that there are people who may be thinking of active damage to our equipment or track, and that we would expect you to be cautious. Your introduction to our staff or suppliers will not mention that, of course, and it should be kept confidential unless there are imminent dangers.”

“Would it be appropriate for my wife Amelia to accompany me for some of the investigations? She generally edits and sometimes transcribes my reports, and is acquainted with my work, often suggesting improvements. It could save considerable time and busy work if we avoid the transcription of my notes. Moreover, we can commence editing them more quickly, and you may be assured that she is fully cognizant of the need for discretion and confidentiality in work such as this.”

“You are fortunate, Mr. Carr. Yes, that would be acceptable, and we would cover your joint expenses, though the fee would be as proposed.”

“Thank you, Sir Joseph,” I replied, thinking that Amelia was probably worth more on such a project as this than most of the men who had been in the room earlier.

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I limited my indulgence in the refreshments to a cup of tea and a couple of delightful shortbreads. As it was then approaching five o'clock, I ascended to our hotel room. The railways had chosen a small but decent hotel that was not, to my knowledge, generally used for meetings. They were obviously worried that publicity about the meeting might give credence to the possibility of deliberate damage in relation to the Montparnasse crash. That could, of course, affect revenues and profits

Amelia was lying on the bed in her chemise when I came into the room. She had removed her skirt, jacket and blouse, as well as her corset.

“Richard. Has your meeting ended?”

“Yes. All done for today, and actually for this trip. But Pease wants me to do a six-month study of potential dangers to the GNR and NER. There'll also be expenses, and they will include provision for you to accompany me. I just wish I could bill for your time, since you make sure our reports are well-presented and clear of silly errors.”

“I'm surprised they would countenance including me in the expenses, but am grateful. I find myself becoming more and more sympathetic to the Women's Franchise League.”

“We need to talk to Parks, Crane and Komarova.” The first two were apprentices we took on over the years who have stayed with us. Komarova is an exiled Russian woman who does calculations for us on a piece-work basis. She makes much more money than she would from a wage, since she is very good at computing, and she can choose her time of working to suit her family's needs.

“From my recollection of our current work, it should be possible for us to take on the assignment,” Amelia said. “But you should also include Gus. He's 21 now.”

Gus – Augustus – Carr was a nephew we'd taken on in 1888 as an apprentice. He'd done well. That I had overlooked him was because I still thought of him as a boy, which was, to my embarrassment, no longer the case. Indeed, he had finished his apprenticeship, though his transition to junior engineer was hardly noticed – he had been doing real work for several years.

“Yes. He should be included too. That is my mistake, based on still thinking of him as a youth.

“To continue, Sir Joseph cautioned that there has been some information that there are people actively trying to damage railway equipment or operations, but we are to keep that aspect of the investigation under our hats.”

“Do you think there may be personal danger?” Amelia asked, but not with any particular concern in her voice.

“I would suspect that if we stumble upon plans for some sort of malevolent operation, those involved might be expected to try to thwart efforts to stop them. You may recall that a railway policeman – Robert Kidd was his name – was killed at the end of September at Wigan railway station. The accused in that crime are before the courts now. So, in that respect, there would be personal danger.

“While there are a number of groups interested in causing trouble for Great Britain, and I would expect the railways are symbolic of British progress and wealth, my current estimation is that human error and failures of equipment or materials are more probable risks. Still, the Irish are ever unhappy, and there was that strange French anarchist who blew himself up at Greenwich Observatory in February last year, as well as the assassination of French President Sadi Carnot. His uncle was the celebrated engineer who did so much to develop the study of thermodynamics. There’s also the Montparnasse crash that isn’t properly explained.”

“But you’d like to do the investigation?” Amelia asked.

“I think it’s important that someone – someone competent of course – do it.”

“And you, Richard, are very competent at what you do.” She gave me a kiss.

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Dinner à deux



Somehow we had learned that the Café Royale was a good place to eat, and moderately historic as well. Amelia had arranged via the hotel that we had a table for half past six. It was not far to walk, but we needed our coats for the Scottish evening, which was already dark. During our walk, I asked Amelia “Did you have an enjoyable day?”

“Indeed. I walked for some distance about the town, both the older part between the Castle and Holyrood Palace and, after some tea in a pleasant café, the so-called New Town. Although we were late rising, and I only left the hotel at half-past eleven, I rather wore myself out, which might explain why I was stretched out on the bed when you came in from the meeting.”

“That does sound a busy day.”

“I even bought a very nice pullover for myself,” Amelia added.

“You’ll have to show me when we get back to the hotel,” I answered, knowing that it would be a good choice even before I had a chance to see it.

Perhaps at this point, I should give an introduction to Amelia. We met originally when she nursed my first wife, who was dying of cancer of the womb. Amelia is two decades junior to me, and I find

it annoying that she is often taken as ... well, other than my wife.

About two years after Geraldine died, we met by chance while both out for a walk on Tunbridge Wells Commons on the August Bank Holiday Monday. We found we enjoyed each other's company and would arrange to walk or attend lectures or recitals. After some months, and with some reticence on both sides, we recognized that despite our difference in age, we were well suited to each other. I believe we have both been happy with our marriage, and share a great deal of our time, since we often are together in what we call the 'office' where we each have a desk.

The Cafe Royale turned out to be a good choice. I had a small but delicious steak of highland beef. Amelia had baked salmon. As is our wont and our habit, we each tried some bites from the plate of the other.

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Paint and rivets



McNaughton met us at Waverley station at 10 o'clock as arranged. He seemed a little surprised to see Amelia. Perhaps even more surprised that she had a leather folder with a notepad, with a small ruler and some pencils.

"Mrs. Carr does a great deal of the editing and transcription of our engineering reports," I explained.

McNaughton seemed to put two and two together suddenly. “Ah, yes. I had a note by special messenger last night at my home from Sir Joseph. He wrote that you are likely to be preparing a report on possible ways to improve safety, minimize risks and possibly costs.”

“Yes. We hope to do so, but must make sure of our obligations to other clients before going ahead. However, I am fairly certain we will be able to undertake the investigations Sir Joseph has requested. One of our main concerns is to encourage people like yourself to give us their opinions and concerns. In a meeting such as that held yesterday, ideas that may seem superficially silly will not be voiced, but could be the seed of important understandings and improvements. I think my biggest challenge will be to gain the confidence of those who have concerns or suspicions – ideas that could be either wrong or right but should be considered – and get those views out in the open without causing embarrassment or loss of face.”

“I applaud your candour, Mr. Carr. Do I take it you plan to keep the opinions anonymous to avoid creating friction between staff?”

“If necessary, yes. Of course, credit should be given where due. I believe I’m a competent engineer, but there are many subjects where my mastery is incomplete. But we are putting the cart before the horse.”

“Indeed. Let us get to North Queensferry. The train at the next platform leaves in a few minutes. Then we’ll take an inspection car back across the bridge and I’ll point out some features of the bridge and our maintenance operations.”

“That would be wonderful,” Amelia joined in. “Mr. McNaughton, would you believe that we had a similar excursion across the Mordijk Bridge on our honeymoon some years ago? Mr. Carr had for some years corresponded with a Mr. F J Frohn of the Rijkwaterstaat who was involved in the bridge’s construction.”

“Really! Mrs. Carr, you are a revelation. Generally, women are not considered interested in engineering.”

“Actually, our company employs several ladies to do computations. They are able to choose their hours to fit their family obligations, but have proved very reliable and efficient.”

“Most interesting. I’d not have thought that. The world is changing, Mrs. Carr.”

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Our visit to the Bridge was most satisfactory. McNaughton, having realized Amelia would not be bored by matters related to the engineering, presented different aspects of the project forthrightly. He pointed out that even on a Saturday, a painting crew was working.

“We clean and paint from one end to the other, then start over again. It’s a continuous operation.”

I asked “Do you have a program for checking for corrosion and loose rivets?”

“To answer about the rivets first, as we clean before painting, we tap the rivets to make them ring if they are good.”

“Yes. That’s the usual approach. What is the method to record the testing?”

“We ask the inspectors, though it’s nearly always the same man – Jock MacKay – to report any bad rivets,” McNaughton answered.

“Might it be helpful to prepare some sheets that show the location of all the rivets on which tests could be marked. That would then show where tests were clear and where they failed, rather than relying on absence of a report to indicate good rivets. Moreover, it may be possible to discern patterns where rivets are failing, such as where wind and rain or else loading from trains may be imposing higher stresses.”

“That could make sense, but the men might not like the extra work.”

“It may be helpful if they can be encouraged to develop such a system as if they invented it themselves,” Amelia suggested.

“Indeed Mrs. Carr. If the men can be convinced it is their own idea, they will certainly carry it forward. Do you believe they can be so inspired?”

I did not wait for Amelia to respond, but jumped in myself. “It may be useful to spread the word that we are seeking suggestions for how the work may be made both more effective and also more efficient, and hint that we are wondering if there are patterns in how loose rivets arise. Perhaps a prize could be offered for the best suggestion. We can correspond to explore some ideas, and I fully anticipate that such measures will be of more general interest.”

“Yes,” McNaughton agreed. “There will be plenty of situations where keeping on top of the maintenance is important. The possibility of patterns is recognized perhaps more when failures occur

rather than in advance. I can see why Sir Joseph wanted you on board, Mr. Carr.”

“It is cold and damp out here, and we should find a warmer and drier location so I can ask about considerations of more dramatic possibilities such as a vessel colliding with the structure and how we may mitigate that risk.”

“I suggest we repair to the Hawes Inn,” McNaughton said. “It is rumoured that Robert Louis Stevenson got the idea for *Kidnapped* while staying in Room 13 there in 1886.”

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The Inn had a cosy bar where we found it possible to have some beef-barley soup and good bread with some ale. I made sure we were far enough from anyone to be able to converse quietly without being overheard.

“Frankly, Mr. Carr, we haven’t any specific defences against a ship hitting the bridge or one of the piers. There are a considerable number of aids to navigation, but a vessel out of control or under the helm of someone determined to do damage would not be stopped.”

“Indeed, I must agree with you McNaughton. As far as I am aware, while the sparlings will be sufficiently massive to withstand a blow, the piers above them are likely to fail if hit by a vessel of any reasonable size. A tall vessel might also be able to shift a span with its bridge or even its mast. Probably not bring it down, but cause enough damage that we’d have to do much work to ensure safe use by trains.”

Amelia asked “Has nobody tried to put in a set of anchored cables that would catch and slow vessels not in the channel?”

“Not that I am aware,” I offered.

“I agree,” said McNaughton. “It would need some considerable investment in research to find a workable system that did not also interfere with navigation.”

I mused “Perhaps ideas could be tried with models of the size of rowboats in a tank or controlled waterway. It would be worth knowing if protective measures are feasible, and their costs, even if those costs are not deemed worthy of the expense at this time.”

“Do you estimate the chance of such a collision very highly?” McNaughton asked.

“Truthfully, I have not given it much thought until today. However, with the unexplained event in Paris just over a week ago and various acts of violence in the world, it occurs to me that such possibilities should at least get some consideration. I believe the meeting yesterday was a result of such concerns.”

“Yes. Our world is never quite as we would like it. Engineering generally tries to deal with natural hazards, not human ones.”

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Ideas and outlines



I showed up at our Tunbridge Wells office early on Monday morning. Parks was not yet in attendance, but Crane – who still occupied the apartment behind the office – was already at his desk, with Gus sorting the post that had arrived.

“Good morning, Mr. Crane. Gus.”

Crane answered “Good morning, Mr. Carr. We had not expected you yet, given the long journey from Scotland.”

This was not said with any guilt. It was a statement that reflected our general pattern of behaviour after a long journey, and applied to any of us.

“I am rather early, but on account of an opportunity to conduct an interesting study for the GNR and NER into improving safety

and mitigating risks and their accompanying costs. The railways will pay for 6 months of my time and expenses for both myself and Mrs. Carr, who will be helping to prepare, edit and transcribe the report. As you know, we only work for those railways, and they pay a 50% premium on my fee, so this is a quite large revenue for us if we are not blocked from taking it on by other obligations.”

Just at that moment Parks arrived and asked “What large revenue?” so I repeated the statement I’d made to the others.

Parks said, “I don’t think there’s anything that would absolutely require your time. Mr. Crane and I, with the help of Mr. Carr the Younger, Komarova and her ladies can, I believe, manage adequately, though I do find it helpful to relate to you what we are doing and share our ideas and experience.”

“I concur in that sentiment, and see no reason that even if I am only billing my time to the railways we should not continue to ensure we have regular conversations. Indeed, I believe the railway risk project, as I suggest we label it, can benefit from my expressing my thoughts to those here. I think we will not mention it in any detail to Komarova unless we need calculations.

“Before I forget, there is an aspect of the project that should be kept a closely held secret. To be precise, there is some hint that there may be agents wishing to cause active damage to the railways, and this could, of course, be a risk to the public, to railway personnel and to property and profits. Sir Joseph Pease was emphatic that safety take the first measure of our attention, and the possibility of deliberate damage is one we cannot ignore, but also must not amplify by its mention. Please be exceedingly careful to not speak of that aspect of our work unless we have agreed what we may reveal. I will also note that if there are people actively pursuing such intentions, they are likely to wish to obstruct our work to the extent of danger to our persons. Let us hope that the rumours are without foundation. There are plenty of natural sources of risk, as well as technical and human frailty to consider. However, do keep in mind the possibility of malevolence and communicate any suspicions you may have to the rest of our closed group so that we may consider what actions to take.”

Crane said “Would I be cynical to suggest that the railways are publicly putting safety first, but their ulterior objective is increased profits?”

“The reward to us is the same no matter the motivation. And to be frank, a safety failure hurts profits as well as people. If the railways felt we distrusted their message of "safety first", we would diminish our chance of repeat business. Thus I am prepared to accept Sir Joseph’s statement at face value and use it to ensure that our report really does put the emphasis first on safety, though we will ensure we do not ignore the railways’ interests in their profits. After all, without those profits, we will ourselves be without income.”

“I quite understand, Mr. Carr. I was simply wishing to get your viewpoint on how the railways would read your report. As you have taught me, we have a moral obligation to steer our clients to act with probity, even if their instructions may tend in other directions.”

“Yes. Being a consultant means the path is never quite straight,” I observed. “Indeed, on second thought, let us refer to the project as the Railway Safety Review. Such a title will be innocent enough that Komarova and her colleagues may know we are working on it, but we will need only be cautious about the more delicate possibilities.”

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Thus I wrote to Sir Joseph that very day stating our availability and outlining my understanding of what we would do and our fee. Amelia sensibly suggested we specify details in our response so there would be no misunderstanding. Twenty-six weeks of five and a half days each was 141 days. We decided that it would be likely we would spend a lot of our own time thinking about the project, but also that on many days we would benefit from plenty of time when the focus of our attention was not required to be on such matters. Therefore we used 130 days to be billed. We also stated that expenses for both myself and Mrs. Carr would be charged at our cost and itemized, but receipts would not be submitted unless requested. We specified that we should be paid by invoice at the end of each month for expenses of each period, and for the first five months 10 percent of the fee. The final half of the fee and final expenses would be billed at the end of April, 1896. However, we intended to submit our typed report in person or by messenger to avoid risk of postal loss around the middle of April. This would allow for possible adjustments to the report to accommodate sensitive subjects. Putting such details in our response would avoid misunderstandings of when payments

were due and would ensure we had working capital for the project.

During our return journey from Edinburgh, Amelia and I had already worked out these details as well as putting the starting date at November 2. After talking with my colleagues, I returned home as quickly as I could and had Amelia transcribe two copies of an agreement that I signed and dated. I added a note mentioning that we had already started our investigations with our visit to the Forth Bridge, and that I would, possibly presumptively, continue the work even in the absence of a signed contract. Then I went to the Post Office and sent the letter and proposed contracts, as well as a telegram saying

PROPOSAL SENT STOP WORK STARTED STOP CARR

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The Post Office was on Vale Road, so I returned home via the High Street to revisit our office where I asked Gus to file the rough copy of our proposal to Pease and set aside a secure place for related materials. It was still before eleven o'clock when I got home, though somehow it felt much later. Amelia had just asked for some tea to be brought into our office, and Betty was about to exit the room as I entered, and immediately said she would bring another cup and saucer. I saw there was a plate of ginger biscuits to which I am particularly partial.

I cannot recall that we said anything as Betty returned with the cup and saucer and Amelia took the strainer and poured our tea. We remained silent for a couple of minutes as we enjoyed the warmth of the beverage and a biscuit each. I have noted that we quite frequently have no need of words during such domestic episodes.

Amelia said "While you were away, I started to make some notes on possible topics to cover in our investigation, and especially in the ultimate report."

"May I see?"

"Of course. Here you are." Amelia handed me a notepad on which she had made the entries

- bridges
- track

- trains
- signals
- stations

I said “That is a good start. I think I would add "staff", since poor training or performance can lead to accidents. And I would separate "trains" into "locomotives" and "rolling stock". We should probably have a category "other risks" to deal with the deliberate damage or other matters where non-railway actors are the source of dangers.”

“Can you give an example of what you mean by the last category outside of malicious agents?” Amelia asked.

“Well, I can think that a neighbour of the railway might build a wall that is defective and tumbles onto the track. Or a town council might build a road near to the track in such a way that carts are too close to trains.”

“Or even put a low parapet on a bridge over the railway track so little boys can drop things onto trains.” Amelia suggested. “Did I tell you that I heard a story from one of the shopkeepers last month that there had been much fuss over some boys from a minor public school in the Midlands who stood on a bridge and dropped a brick. Apparently they were trying to drop the brick down the smokestack but gravely misjudged and hit the driver on the head. He was concussed and the fireman did not manage to stop the train until it had over-run a signal.”

“Indeed. That I had not thought about, but it is an example worth mentioning of the risks from external agents, if schoolboys can be so categorized. Can you make a note that we should include it? Possibly we may want to put such stories in an Appendix so we can refer to them succinctly in the body of our report.”

“We have some cards on which I could make notes of things we want to include. Then we can discard each of them as the subject is incorporated in our report.”

“It is a pity that writing machines are both expensive and difficult to use. We will need to explore the availability of services to type-write documents. I also have noted that the systems for ordering loose sheets with metal rings are rather specialized. Still, we can perhaps simply organize the chapters in separate folders or envelopes and then build the chapters as we gather information and develop our ideas.”

“That would make sense, Richard.”

Suddenly I said, “Oh. I just realized we left out tunnels. Clearly a big risk, both during construction and afterwards.”

Amelia asked “What is your list of items now?”

I scribbled for a moment on the pad and showed her.

- bridges
- tunnels
- track
- locomotives
- rolling stock
- signals
- stations
- staff training and performance
- external actors

I said “We have it poorly organized, let us try re-grouping the topics.”

“How do you mean?” Amelia asked.

“Let’s try putting together the fixed assets, the moving ones, the people and the external actors. Let me try again.”

On a new sheet, I wrote

- Fixed railway assets
 - bridges
 - tunnels
 - track
 - stations
 - signals
- Mobile railway assets
 - locomotives
 - passenger carriages
 - goods waggons
 - couplings
 - brakes

- people
 - staff training and abilities
 - passenger behaviour
 - dangerous goods clients
 - hostile actors
 - actions by neighbours

“That seems both comprehensive and well-organized, Richard. Where shall we start our investigations, assuming Sir Joseph accepts the proposal?”

“Oh. By the way. With our colleagues in the office, we decided ‘Railway Safety Review’ as an innocuous enough title for the project that could be on folders or labels. I’ve cautioned them to keep silent on the possibility of malevolent players. But anyone seeing the title suggested will not likely get too curious.”

At this moment there was a knock at the front door. Through the window I could see it was a telegraph delivery boy, so I went to the front door and was there before Betty. After the delivery boy had left on his bicycle, I returned to the office and opened the telegram. It read

PROCEED WITH INVESTIGATION STOP
WE WILL WORK OUT ARRANGEMENTS
STOP PEASE

Amelia said “It appears we should begin. Where shall we start?”

“I think we need to take each of the topics on my list and develop what we believe are the important risks related to each. We can use the concept of expected value that was developed in the 17th and 18th centuries for the analysis of card and dice games and gambling. The expected cost of a risk is the chance it occurs times the cost if it does. So a common but inexpensive risk can be important, as can a rare but expensive one.”

“But Richard, how do we value a life?”

“I don’t think we should. Instead, we could use a life as the unit of cost in judging safety. As an alternative, we might find figures for compensation awarded by the courts, such as that your cousin Mabel received after the death of her husband when his ship was sunk by the Spanish steamer at Dungeness.”

“Would not such numbers be very varied and open to dispute?” Amelia objected.

“Indeed. I am not enthusiastic with that approach, but it is one possibility. I think, however, we should focus first on the potential lives lost or saved.”

“Well, you have developed quite a detailed outline. Where do you want to start to investigate the risks in each?” Amelia asked.

“The GNR has a new man at their Doncaster Works where they design and build locomotives. His name is Henry Ivatt. I think I’ve met him somewhere, but cannot recall where or when. He replaces Patrick Stirling who has been there for nearly 20 years and just retired. I will write to Ivatt immediately to request a meeting at our earliest opportunity.”

Indeed, I was taking out paper and pen as I spoke, and wrote this letter over the next few minutes. At the Post Office I had had the presence of mind to purchase a goodly supply of stamps. As I wrote, Amelia asked “What could I most profitably do in the next day or two?”

I was writing to Ivatt, but replied to Amelia while still writing “I think two things. First, can you organize some large envelopes or folders for each chapter of our draft report, and begin a page for each of the items we have detailed. I think we will also want chapters on *Ranking of Risks*, that is, which risks we judge as most important and why, and also a chapter of *Recommendations* or perhaps *Summary and recommendations*. Those will likely be blank for now, but we can at least set up our plan.”

Amelia jumped in before I could get to my second request. “Yes, I can prepare such documents. I think we have some cardboard folders I can use, and I will clear a space in the drawer below my desk here for this report. It even has a key, and I will arrange to get a copy of that for you.”

“Good. My second request would be for you to see what you can find out about acts of malicious damage across Europe in the last few years. I’m not sure how you should do this. There’s the Tonbridge Free Public Library that perhaps may have copies of old periodicals and newspapers. It would be useful to have contact with people in the police or military, but I’ve no idea who to ask, as such matters are rather out of our area of knowledge.”

“Let me start with the Tonbridge Library,” Amelia suggested. “I

shall go there tomorrow morning and make a preliminary investigation, though I can see that I shall have to be circumspect in my enquiries to not reveal our project's goals."

"Yes. We should think of a reason for your interest. Oh. We need to set up an account book to record all our expenses. That includes what we spent in Edinburgh, but noting the payments we received for that activity. Also for stamps and telegrams. I did get receipts for the total, but no doubt we will have to detail our correspondence. Nevertheless, we should have a box or spike for the receipts particular to this project."

Amelia rejoined "Yes. We need to be scrupulously detailed so there is no danger of suspicion that we are padding the account, nor a loss to ourselves. I will make sure that there is a page for recording correspondence. I will charge three times the stamp value to cover the paper and envelope. And a page for telegrams."

"Yes. There was sixpence for the telegram I sent to Pease. The many little costs could add up. And a good record will record our activity, as much to inform ourselves as provide for billing the reimbursements."

* * * * *

We spent a good deal of the rest of the day adding notes to the pages Amelia set up and putting cards with topics we wished to include in a small box she found that would hold them in an orderly way using an attractive pebble we had picked up at the seaside on some occasion or other. We used pebbles and other such objects as paperweights as well as mementos.

I also wrote to several of my colleagues who I knew had experience in the investigation of accidents. My main discomfort with the project was that while I did know the ways in which railway accidents and misadventures could occur, I did not feel that I had available to me good information on the prevalence of different conditions which could lead to such unfortunate events. Moreover, like generals who re-fight old battles, we prepare to meet conditions that applied in the past, and miss those now about to cause us great grief.

Still, it had been a good start today. Our back and forth to develop the outline of our eventual report gave us a structure to work with. There were a great many very wide gaps in our knowledge that

we would need to attempt to fill in. As this thought came to me, it spurred a parallel one: could we suggest practices that would inhibit or prevent untoward events?

I made out a card about this idea and put it in the *Topics* box. Many – likely most – of these would end up as kindling for the fireplace or boiler, but it was useful to have them for review.

I also thought about existing practices such as that of wheel tapping, which was a good method for detecting broken tires – the outside flanged part of the railway wheels on rolling stock. For some bearings, tapping was also useful as a way to detect insufficient lubrication. But I wondered if there were procedural methods to ensure all wheels and bearings on a train were checked and at appropriate frequencies. Moreover, it would be helpful to keep and to analyse the records in case they could be used to learn from, as well as to provide a way to review how an accident may have developed. I prepared another card and put it in the box.

Then I took a sheet of paper and made some notes under the title *Single track traffic management* and put it behind the sheet titled *Signals*. There had been rather a lot of single track accidents over the years. The most frightening, of course, were head-on collisions where a track was used in both directions. Were collisions with stationary or slow moving trains on the same line more common, like the one at Thirsk? We would need to carefully categorize accidents and tally the numbers.

* * * * *

Digging and sifting



The next morning – Tuesday, November 5, an appropriate day for her research, given Guido Fawkes attempt a couple of centuries earlier to blow up Parliament – Amelia took the train to Tonbridge and went to the Free Public Library to start looking into cases of malicious damage. As an explanation for her researches, we had agreed that she would be gathering examples of how the newspapers presented disasters and acts of destruction or anarchism related to engineering works, with an interest in better methods of communication with the public. This was sufficiently convoluted that we felt it would conceal our true activities. We were not, of course, very sure we would find much material at all.

Still, when she came into the house late in the afternoon, she was full of enthusiasm.

“Richard, I found that they have collections of several newspapers going back some 10 years. I think these may be enough to give us direction concerning deliberate damage. And our nominal topic of research could actually be a useful project in itself, though it may not be a profitable one.”

“How do you plan to proceed with your investigations?” I asked.

“I plan to look primarily at the front pages of the papers and note relevant stories. Then I’ll see how each newspaper handles and follows each story. However, I think it may be difficult to get good estimates of the chance that the railways will suffer an attack.”

“That approach seems reasonable, even if you cannot get the quantitative information we seek. You will still get some idea of what has happened so we can consider possibilities. How long do you think it will take to get some preliminary feel for the subject?”

“As I’m only looking at front pages, at least to get the starting points of stories, it should not take more than a few days of work to see if we’re making some progress. However, I doubt I can spend long periods looking at the newspapers without my eyes and head becoming crazed. I will likely limit myself to a few hours at a time, perhaps a morning or part of an afternoon.”

* * * * *

That same day I had decided to set up a second set of cards on which I could record incidents or disasters, one per card, in order to prepare one or more tables or lists so I could show prevalence and patterns. I suddenly realized I would likely need to correlate this information with traffic on the lines and other factors. I probably would not be able to get very complete information in that regard. For serious accidents, I should see if copies of the Railway Inspectorate reports were available to us.

I was starting to feel tired just thinking about all we would need to do, so decided that, as we would need more of the card-stock, I would take a walk to the High Street and visit the stationers there. I could drop in to the office and let Parks and the others know how we were progressing.

Having let Betty know that I would be out for a while, I donned my hat and coat, picked up my umbrella and made my way down to the High Street.

It was fortunate that I had the presence of mind to bring a sample card, as there were several choices. I bought several packets of an appropriate version and got a receipt. There was also a box suitable for the cards. I bought two of those, one for the ‘disasters’ as I thought of them, the other for the set ‘ideas to be included’ that we already had started. The boxes would avoid relying on the pebbles to keep things from blowing around in the office. Amelia had a shawl she liked to put over her shoulders if it were cool in the office, but this item had a magnetic attraction to any loose items on desks or tables and would sweep them onto the floor.

I arrived at the office at a propitious time, as my colleagues had just made a pot of tea. Thus I was not disturbing their work to relate what Amelia and I had been up to. Crane said “What you have described about the structure of the planned report should serve well to keep the information properly organized, but I do not envy you and Mrs. Carr the effort that will be required to gather the details of such material.”

“That is true, Mr. Crane. I will ask all of you to write down anything you come across in your day to day experience that could be of use. It has particularly occurred to me that it would also be useful to try to obtain information on the intensity of traffic or other factors that might influence the risks to railway safety.”

Parks said “A serious risk has always been the failure of wheels and axles, since such events almost always presage a derailment. We all are aware that the staff tap the wheels and bearings, but it is certain that the organization and recording of such activities is uneven or even haphazard. Moreover, I recall hearing recently of some waggons that still had riveted tires, though I believe that they were banned some four decades ago.”

I said “If you come across the reference, Roger, that would be helpful. Indeed, anything any of you can contribute will be welcome, but especially so if we can provide details of the origins of our information. I fear the project will, in terms of time and effort, largely be one of gathering and organizing data.”

Gus intervened “But surely our practise is always about data?”

“Well said, Gus,” I responded.

* * * * *

Late in the afternoon of Sunday, November 10, Amelia and I had just returned from Tonbridge where we had been invited to a mid-day dinner with my sister Maude and her husband James. The sun had already set when we walked home from the Central Station, and the gas lights glowed with a halo given the humid November air.

We had just got our coats and hats hung on the coat rack and Betty had informed us that there would be some soup, bread and cheese for our supper when there was a knock at the door. It was a telegram boy, with a message from Sir Joseph.

CRASH ST NEOTS LATE SATURDAY STOP

PLEASE INVESTIGATE THERE AS
 FAR AS PERMITTED STOP
 HAVE NOTIFIED OAKLEY YOUR TASK
 STOP PEASE

There had been nothing in the newspapers, so whatever had happened must have taken place too late to make the regular editions, and locally in Tunbridge Wells we didn't get the later ones. "Oakley" was Sir Henry Oakley, the General Manager of the Great Northern Railway.

"We had better prepare your valise in case you need to stop over in Cambridgeshire," Amelia said, and rang for Betty.

Betty was informed I might have to be away for a couple of days and that I would be leaving very early. She volunteered, even before I could ask, to ensure I would have some sandwiches and a bottle of cold tea, and that she would put them in a cloth bag in the pantry this evening so I could leave as early as I wished. My staff knew me well, and we worked as a smooth team.

Given my intentions, Amelia and I retired early. When we had visited the United States three years ago, we had purchased an ingenious alarm clock, and I set this for 5 a.m. It would be an early start, but I wanted to be at St. Neots by mid-morning at the latest.

* * * * *

Crash investigations



I caught a train to Charing Cross around six o'clock in the morning. Having remembered Betty's sandwiches, I was able to eat on the train. She had packed me some bacon sandwiches and some with cheese, along with some biscuits and a pair of apples. I would have more than enough for lunch, should I be unable to find a café.

It turned out I was at King's Cross before 8 o'clock, having been fortunate in getting a hansom almost right away at Charing Cross. I bought a ticket for St. Neots and went to the appropriate platform. The train was not yet available for boarding, but I walked down the platform a short distance when I was accosted with "Mr. Richard Carr, is it not?"

The voice turned out to be that of Colonel Francis Marindin, the Senior Inspector of Railways. I responded "Colonel Marindin, though I know many call you 'Major'."

"Colonel is a bit more recent, but I retired as Major and won't be offended by that title. Are you going to St. Neots?"

"Yes. Sir Joseph Pease has asked me to investigate on behalf of the NER / GNR consortium. I will endeavour to keep out of your way."

"From what I know of your work, you won't interfere, and suit-

ably discreet observations will no doubt be useful to ensure completeness of my own investigations. A little bird tells me that Sir Joseph is, shall we say, taking a particular interest in safety. For example, by calling a quiet meeting 10 days ago in Edinburgh.”

“You are well informed, sir. But I would expect no less, and am glad that you are.”

“Shall we take a compartment together?” Marindin asked. “I’d welcome your opinion – your general opinion, that is, to avoid complicating your relationship with the railways – on some of the developments in our sphere of engineering.”

“Certainly,” I agreed. It could be of immense help to be on good terms with the Senior Railway Inspector.

Once the train started, the Major said “Damn nuisance having to be up so early. I missed my breakfast.”

“Our cook was good enough to provide me with sandwiches, and more than I could eat. Help yourself.”

“I am so glad we ran into each other, Mr. Carr. This will carry me to lunch.”

* * * * *

During the half hour or so journey to St. Neots, we talked a bit about some different issues relating to railway safety. Nothing was said about particular companies or equipment, but we seemed both to be concerned that there was a need for systematic and continuous gathering of information on the state of the fixed and mobile equipment. In retrospect, the accident we were about to investigate was central to our interests.

When we got to St Neots, workers were clearing some of the debris, but had fortunately not disturbed the immediate area of concern. Our train slowed to a crawl a mile before St. Neots and shifted to the Up line to get round the mess.

Oakley was waiting on the platform for the Major, and went straight away to offer him his hand, though he gave me a slight nod to acknowledge my presence. I was not surprised that he kept our public interactions subdued. Accidents were never positive events for the railway companies.

We made our way almost immediately to the track about 40 yards south of the end of the down platform. There the rail was broken in

a number of pieces. Later it was stated that there were 17 pieces, but I never established whether the incoming and outgoing intact rails were included in this count.

The Major said “The broken faces are mostly bright, so we may anticipate that the breakage was immediately before the derailment.”

One of the Major’s team already on site had placed the pieces on a sheet of canvas. Photographs were being taken. Oakley said “We were lucky that there were only 27 passengers, but a Louisa O’Hara – we are not sure if Miss or Mrs. yet – was killed. She was ejected from the sleeping car and her head hit a goods waggon. Six passengers and the guard also sustained injuries, but are expected to recover.”

“And the locomotive survived without damage?” the Major queried.

“Yes,” Oakley responded. “It is one of our newest 8-foot Singles, number 1006.”

Through the rest of the morning, similar exchanges continued. Given the broken rail, with its bright metal indicative that the break was sudden and unanticipated, it was likely that the railway would escape serious blame. At this time, we did not have a good way to check every inch of the track. Brittle metal could get into the manufactured rails. I took notes, annotated with questions I would like to follow up later.

Prime among these was to find out from Henry Ivatt what the loading on the rails would be from one of the ‘8-foot Single’ locomotives of his predecessor Patrick Stirling. Just one pair of massive driving wheels might put excessive stress on the metals. No doubt the Major would be chasing the same line of investigation. As I have already noted, I had written to Ivatt, but it had only been a few days ago, and he had only taken up the Locomotive Superintendent’s job less than two weeks ago. Thus I had had no reply yet to my request for a meeting.

In my annotations, I put down the idea that we should have a table of wheel loadings from diverse rolling stock. Clearly the locomotives might be the prime candidates, but there were some waggons for heavy goods that might also be of concern. And it could be potentially important to discover the effective contact area of wheels with track. Nominally this would be an infinitesimally thin

line across the wheel face where the circle touched the line. In practice the rail and the wheel would deflect. Ah, yes! How much did the metals deflect between the chairs supporting them? Did it matter how fast the wheel passed over the rail section between chairs? Was there an effect like bending a piece of wire back and forth until it broke? Many questions needed to be asked and answered.

For most of the morning I watched and listened as the Major and Oakley and their assistants collected samples and measurements. And I made my notes. Around half-past 11, the Station Master came towards us and asked "Is there a Mr. Richard Carr here. I have a telegram for him."

"I'm Richard Carr," I said. "Several of these gentlemen can identify me if that is necessary."

"It may have been necessary, sir, but I'm sure they will object if you are a stranger to them."

He handed me the telegram and I opened it.

IVATT CAN MEET YOU DONCASTER TUESDAY MORNING STOP
WILL INFORM HIM UPON YOUR REPLY STOP
AMELIA

"Station Master. May I send a reply?"

"Of course, sir. But perhaps if you would not mind, we could do so in the office."

"Certainly, and it will be easier for me to pay for it there if needed."

It turned out my letter from Sir Joseph asking staff of the GNR and NER to render me assistance was sufficient to avoid payment and getting a receipt for the telegram. At this point in time the railways had surrendered the telegraphic services to the Post Office, but retained essentially free usage of the system, so payment would have required some administrative gymnastics.

I replied to Amelia

WILL TRAVEL DONCASTER MONDAY NIGHT AND
MEET IVATT MORNING STOP RICHARD

After I had sent the telegram, I purchased a ticket to Doncaster, then returned to where the various investigations were going on and informed the Major and Oakley of my plans to go to Doncaster on a train in the late afternoon.

“I hope you will join us for lunch at the Olde Sun,” Oakley said. “Sir Joseph sent me a letter telling me of his request that you give us ideas how we may improve our practices with regard to safety, and this current misfortune emphasizes our need in that regard.”

“I will be happy to join you, though I must make sure I’m back in time for my train to Doncaster.”

“You can leave your valise with the Station Master. The Sun is a bit of a walk, as the town is some remove from the station, or perhaps we should put it the other way round. And if we walk together, I can apprise you of some pieces of information or rumour that may be relevant to your work.”

I took Oakley’s advice, and deposited my valise, which was not a large one but still would be a nuisance to carry, with the Station Master, then joined Oakley for the walk of perhaps 10 to 12 minutes.

“I fear that this accident is one that we do not, at the moment, have the tools to forecast. While the investigation must continue, a first impression is that the rail collapsed suddenly and derailed the train.” Oakley said.

I replied “While it may be too early to pronounce, what I saw this morning points to a failure of the metal. It is a subject about which we know less than we should, but even if we learn more, it may still be very difficult to find ways to predict failures with sufficient precision to be useful.”

“Indeed, Mr. Carr. It would be ideal if we had some small car that could run along the tracks and check them. Do you think tapping would reveal the faults?”

“That’s difficult to say. But eventually I can imagine there will be ways. And it may be that special cars are not needed. If the measuring devices were not too expensive or awkward to use, perhaps they could be fitted on regular rolling stock so that the ongoing revenue traffic measures the track. However, I fear that may be a very long way off.”

“A motivating idea, nonetheless. Now I should tell you about some rumours and gossip that have been heard. I’m afraid that it is not very precise. A couple of track workers have said things to one of the foremen who – rather sensibly I believe – buys them the odd pint to ask how things are going. They won’t inform on their colleagues or their neighbours, but the foreman doesn’t ask anything directly. However, some hints may be dropped. One is

that they've seen the odd fishplate bolt undone, and the occurrence is improbably due to vibration of the track. Another is that there is some grumble that the family of George Petch, the guard killed in the Thirsk collision three years ago, is reported to have ended up in the workhouse or is in imminent danger of ending up there. We did give the widow some money, but apparently Petch also supported his widowed sister and her offspring. You may recall the signalman Holmes was charged and in fact found guilty of manslaughter, but the circumstances were that he had declared himself unfit, having not slept for about two days due to his daughter's illness, and the judge discharged him absolutely."

"I recall reports that the court cheered on that discharge."

"Yes. And the Company did not come out of it in a good light."

"It does not fit with my knowledge of the management that they would force a signalman to work when in such a state," I commented.

"No. It was a series of miscommunications and misunderstandings as far as I can glean at this remove. We shall probably never know, but I have tried to impress upon the supervisors to be cognizant that those in critical positions cannot be impaired in any way."

The other parties seemed to have slowed their walk, and we caught up to them. The subject somehow changed to football, in which the Major had achieved some fame in his earlier years. I was not a serious aficionado, but fortunately I did read about the sport in the newspapers and had been to one or two games over the years. Mostly I kept quiet, but did ask a question of the Major about the role of amateur versus professional players.

"An awkward issue, Mr. Carr. To get the very best performance, a man needs to train assiduously, and a working man, even one with some flexibility in his employment, will have difficulty finding sufficient time when light and conditions permit such training. But professional players may be tempted to, shall we say, bend the rules or else play when injured. Neither of those possibilities is attractive, but I foresee that professional players will eventually be ascendant within the leading sides, even as I would wish otherwise."

The Sun offered us an excellent lunch, which would save me having to hunt for a decent meal in the evening. Moreover, it appeared that Oakley had pre-ordered the fare and it was ready almost as we arrived. That was very convenient for me, as I did not have to hurry

my departure with the pudding course half-eaten.

Conversation over the meal flowed back and forth over different aspects of causes of derailments. I cautiously asked if any of those present knew of comprehensive tables of axle loadings for rolling stock, both empty and loaded. The answers suggested that there were informal tables within different engineering works, but not anything well-organized.

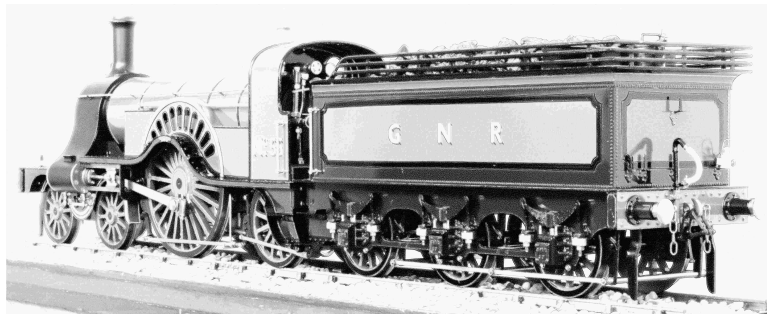
“Would it be reasonable for me to suggest that I collect and collate such information, to be shared among those who are willing to contribute data from their own rolling stock?” I posed this question as cautiously as I could, knowing there might be concerns among different groups, even within a single railway company, to keep the information under wraps.

The Major jumped in, however, saying “It would need correlating with the tracks upon which those axles rolled, and the volume of traffic, so that reports of broken or damaged rails can be linked to the loading. If, of course, it turns out that loading is a determinant of tendency to fail. That is, however, one of the hypotheses upon which I am hoping to find evidence, though I fear it will take quite a time and much effort.”

Oakley, surprising for a man who would have to find the funds to do so, chimed in “I suspect we cannot avoid doing that work, Major. Our trains are getting heavier and faster, and the public will not stomach many wrecks.”

At this point the landlord brought in a steaming plum duff with a large jug of custard. This had the effect of killing conversation as it was very tasty. After we had finished the pudding, my watch showed me I must not tarry, and I made my farewells, stopping only to visit the WC. It might be a long time until another was convenient. No wonder some were labelled "Public Convenience". A euphemism, but not inappropriate.

* * * * *



When I got to Doncaster, there was an easel with a board on it with "Message for Mr. R. Carr" written on it. I identified myself to the platform agent and was told the ticket office had the message which concerned accommodation for me. There, I found a note that told me a room had been reserved at the Magdalen Hotel in the Market Place. Thus I asked the agent who had handed me the message for directions and repaired there directly through dark and somewhat wet streets.

Having started very early, I asked the hotelier if I might have a mug of cocoa delivered to my room so I could retire immediately. The answer was in the affirmative. I requested to be wakened at half-past seven if I had not come down for breakfast, then mounted the stairs to my room. I hardly had time to hang up my coat and hat and visit the WC and was unpacking my valise when there was a knock and a waiter delivered my cocoa.

I still had two sandwiches, some biscuits and an apple left from the "breakfast" Betty had provided, even given the Major's depredations. These were in the top of my valise. I ate them while sipping the cocoa as I put on my night attire, and was asleep by half-past 8 o'clock.

* * * * *

I woke around a quarter to 7 in the morning and was downstairs before my requested wake-up knock. The note I had received at Doncaster Station said Ivatt would be pleased to receive me at the Doncaster Works of the GNR any time after half-past eight. I asked the clerk if a hansom could be arranged for twenty past eight, then went into the eating room for breakfast. The fare was plain but

good, and I was in a good mood when I stepped into the hansom. Before I left the hotel, I ensured that my room was available that evening.

Ivatt was in his office, but already had two assistants with him who he introduced to me. One was my former finishing apprentice Henry Armstrong, to whom I had to apologize for forgetting that he had joined the Doncaster Works some years before. Well, it had been a decade and a half since he had worked for me. I wrote down the name of the other assistant, a Mr. Jeremiah Gough, then commented that I was happy to wait while their conversation was concluded.

“You may be interested in our deliberations, Mr. Carr,” Ivatt said. “The Stirling 8 foot 4-2-2 locomotives have proved fast and powerful, but I am concerned the single point of contact on each rail puts too much reliance on a tiny area to drive our trains and carry much of the weight of the locomotive.”

“Have you had any information yet from St Neots where I was yesterday?”

“Not yet. But I did get a telegram from one of my colleagues who was sent down that a rail was broken. It is premature to hypothesize, but I will not be surprised if heavy axle loadings are found to contribute to rail breakage.

By the way, I am sad to report that Stirling died yesterday. We had a message sent round from his family just this morning.”

“That is a sad event, and so soon after your appointment.”

“Yes. It would have been helpful to be able to discuss ideas, even if he may have been chagrined at my appointment.”

“Was he not well into his seventies?” I asked.

“Yes. However, some men do not find a smooth passage to a less active role.”

Despite the sad news about Stirling, we were off to a good start, and through the morning discussed various sources of risk to railway equipment, infrastructure, staff and passengers. I shared my planned set of categories of risk, and Ivatt complimented me on it. We agreed to keep in touch as the safety report was developed. In that Ivatt was the Locomotive Superintendent of the GNR, who were, in a sense, commissioning my report, I felt I could share most of my findings and recommendations with him. At this point, I sincerely hoped that the facts would reveal that the practices and

policies of the companies who had hired me were, if followed correctly, and in both their spirit and letter, likely to result in safe operation of the railways. The possible existence of external, human threats was a risk of which we as yet had no measure, and I made no mention to Ivatt of this.

On the other hand, we did talk of ways that we might evince ideas and observations from the workers who were most directly in contact with the fixed and movable infrastructure. I told him I was particularly eager to talk to inspectors of the track and rolling stock to try to encourage them to give me a sense of their own feelings about what might be risks.

Ivatt agreed. "Yes. The men will do their job and report any of the conditions they are told to report, but there are likely many other things we don't ask them that might, if we gave them some thought, suggest how we could forestall accidents."

"Exactly," I concurred. "The trick will be to gain their confidence that there is no risk to their jobs, nor more difficulty in carrying them out."

"Yes. The answers you get to questions will be coloured by what they think might be the personal consequences to them. Nevertheless, if you wish, you could talk to some of the inspection crews. I'll introduce you now to the foreman of one of our locomotive inspection groups, as I know he is here today. His name is Andrew Shaw. And I'll ask who might be a suitable contact for a track gang. Would you like to talk to one of them this afternoon?"

"Yes. That would be a good idea. I think I should aim, if possible, to get back to Tunbridge Wells tomorrow night. I think that means taking a train mid-afternoon."

"I'll get my assistant to arrange that for you while you talk to Shaw. I gather you are already acquainted with Mr. Armstrong, and I will suggest you communicate primarily with him, and I will ask him to be assiduous in keeping me up to date on your progress."

"That should be a good working arrangement, as Mr. Armstrong and I can indulge some investigation of speculative ideas that are then summarized for your consideration. There will, I am afraid, be quite a few threads to follow that end in nothing."

"True, true, Mr. Carr."

* * * * *

Shaw was a Yorkshireman. I had some trouble with his accent at first, but it was clear he knew his business, which was inspecting the locomotives and rolling stock, though actually he led all the movable equipment inspection gangs. He would sometimes be asked an opinion when his inspectors were unsure what they were observing.

I asked him what were his views on how we might anticipate problems that could lead to accidents.

“Tis a pity we can’t see when the metal of the wheels is starting to weaken. We see it well enough when ’tis broken, but by then t’engines off t’track and heads are smashed and bleedin’”

“I won’t disagree, Mr. Shaw. Metal fatigue is a fearful problem for us all. Tapping and a good ear seem to be helpful, but they likely don’t catch more than a fraction of cases.”

“True ’nough, Mr. Carr.”

“Would it help to keep track of suspicious cases? Or perhaps you already do that?”

“Nay. We’re to report damage, not the smell of it. If there were perhaps a way to keep track of observations, it might give a chance to be early on the report, but it would be a fearful amount of work. Men wouldn’t like that.”

“No. Nobody wants extra work, especially if it isn’t obviously helpful.

“Can you tell me how reports of damage are submitted?”

“We simply write down t’number of locomotive or waggon and t’location of damage and send it in to t’office.”

“If there were someone to go through the reports, would it make sense to give the inspectors a diagram of each waggon where they could mark their finding for each tapped wheel, with a question mark if they were unhappy with the sound, but not sure it was damaged?”

“You’re thinkin’ that over time we could get a picture of things and a bit ahead?”

“Yes. And perhaps some idea which wheel locations give more trouble. But ’ahead’ is definitely the goal. However, I’ve no illusions it will be easy. Nor whether the railway will consider it worth hiring someone to sort and review the reports.”

“Indeed, Mr. Carr. Directors like their profits. And workers cost wages. But if you can persuade them, it could pay a dividend in t’long term.”

“I doubt a full-scale adoption of such a plan would work, but perhaps we can consider a pilot attempt. It occurs to me that my consultancy does very well with some ladies who contract with me to do calculations. They are good with details, and those who are good at calculation make, if I may say so, a better income than some skilled workers, though others fall by the wayside from the drudgery, especially if they are slow.”

“Could well be worth t’attempt, Mr. Carr. If it shows promise, t’will likely bring smiles all round.”

* * * * *

Ivatt’s assistant, not Henry, but the one whose name I wrote down somewhere then forgot, fetched me from the locomotive shed where I was talking to Shaw and took me to a part of the shunting yard where a small works locomotive was coupled to a pair of engineering waggons, one of which had space for workers to travel out of the rain. It was due to leave soon, and raising steam, so I only had about twenty minutes to talk to the gang foreman, a Mr. John Troutman.

The conversation started rather poorly, and Troutman seemed suspicious of my role and motives. Things eased considerably when I mentioned I’d just come from St Neots and was able to answer some of his questions. Though the investigation was far from concluded, when I told Troutman that I’d observed bright metal in the broken rail pieces, he became interested.

“Must’a shattered somehow. Got brittle and gone like glass. Seen a coupl’a cases of that. Almost always leads to a derailment, and derailments almost always lead to injuries or worse.”

“As far as I can comprehend at this moment,” I said, “unless we can figure out ways to make it possible and straightforward for you and your gangs to get advance warning of bad outcomes, we’d do as well to sing a lullaby. From my conversations with the directors, the railway is genuinely interested in reducing the chances of accidents, even if their motives are as much profit as public safety. However, if there are ways that can be devised to better inspect the track or otherwise to get foreknowledge of accidents, I think they’ll provide resources. I regard a significant part of my task to ensure that whatever measures are introduced, they ease the job of inspectors. It is often possible to get information by intense effort, but the men

won't support that for long, if at all. And inspection demands a terrible consistency of attention. To my mind, new ideas have to have benefit all round or they don't usually succeed."

"I appreciate hearing you say that, Mr. Carr. You're dead to rights that the men hate it when some new-fangled procedure is decreed and it requires fuss and fiddle. On the other hand, a better tool makes for a happy gang."

I gave Troutman my card, as I had Shaw, and said I would welcome correspondence, and could come back if there were interest in discussion. Moreover, that I would be happy to talk with his inspection crews, in that the voice of those actually working the line and rolling stock was, in my view, important. Details that might be filtered out by layers of intermediaries could be vital to improvement.

"You could do worse than share a pint with them and tell them your ideas. If I'm right, you are a consulting engineer, not directly on the Railway staff. That might help a bit to ease the men's minds."

"Perhaps, but my fee is paid by the Railway, just as their wages are. However, where would I find them?"

Troutman suggested a public house that he said was popular with the inspection gang and said he would be there at half past six that evening.

* * * * *

It was now after half past one o'clock and Ivatt's assistant, whose name I now registered as Jeremiah Gough, accompanied me back to Henry Armstrong's office.

"I took the liberty of getting some sandwiches for us," Henry said as I came into his office. I noted a teapot was steaming on a tray with two cups as well.

"That is extremely thoughtful of you, Henry. I will admit to having a bit of an appetite."

As we ate our sandwiches, Henry told me about his wife, Anna, who he had married soon after coming to Doncaster about a dozen years ago. They now had three children, aged 7, 9, and 11.

"You must come and meet them. Are you free this evening?"

I told Henry about my plan to have a glass of beer with some of the rail inspectors, and my motivations to do so.

“If you can win their confidence, there could be much to be gained in terms of better outcomes,” Henry observed.

“That is my thought as well. It will take tact and honesty, I believe, but we have little to lose by trying.”

I agreed that I would return to my hotel in time to have a modest meal, then go to meet the rail inspection workers, then take a hansom to Henry’s house.

We spent the afternoon discussing how to measure the axle loadings of different rolling stock, and forayed a couple of times into the works to see some of the measuring equipment already there. There were a couple of devices of the form of a weighbridge that could measure the weight on a single wheel or a pair spanning the gauge, so we would be able to get axle loadings.

Henry said “It would be nice to be able to record the weight of axles passing over a section of line.”

“You mean to record the weights on some sort of automatic diary?”

“Yes. It might not be as accurate as our static measurements, but I have been giving some thought to mechanisms. Unfortunately, they are not small and easily installed, and are likely to require considerable care and maintenance.”

We talked about some of Henry’s ideas, which I feel are most ingenious. They involve a small piece of rail that can sink a very small distance under the weight of a wheel. This is amplified many times by lever action and moves a pencil on paper until a spring is in equilibrium with the weight of the axle. The unloading of the rail section releases the pencil from the paper and advances the paper a small amount. Henry also considered a clock to record times on the paper periodically.

“Lubrication of the rail piece and keeping it properly aligned will be challenging,” I said.

“Indeed, I fear that ensuring the rail cross section does not deform, especially under the constant hammering as wheels cross it, to be the greatest obstacle to a reliable measure. And there could be dynamic influences that depend on the speed of the wheels across the measuring rail.”

“Might hydraulic or electrical methods be possible?” I asked.

“I fear we do not have adequate knowledge of the changes in pressures or electrical properties yet, nor good ways to capture the

measurements quickly.”

We both were silent for a few minutes, thinking of what we had been considering. There was much that we would wish were easily possible, but then, that is a universal complaint.

* * * * *

I returned to my hotel around five o'clock. After a wash and ordering my notes from the day, I went to the dining room and was able to have a steak and kidney pie. Its quality was not quite as good as the morning breakfast, but it was not offensive. Feeling sure Henry and his wife would offer something as a treat later, I eschewed pudding, gathered my coat and hat from my room, along with my cane, and asked for directions to the public house where I was to meet the rail inspectors who chose to drink there.

There were just four of them, as it turned out, including Troutman. After he introduced me, I said, “Might I buy you each a pint in exchange for your opinions?”

One of the men said “We’ll ne’er refuse a pot of ale, but I doubt our views will be worth the expense to you, Mr. Carr.”

“I’ll take a chance,” I said, smiling. “My consultancy has been engaged to review safety for the GNR and NER, and I’ve been in the engineering trade since I was a very young man. Over the decades, I’ve gained a lot of respect for what the men know whose hands get dirty with the real work.”

“Aye, those in the Company special carriages often like to see their reflections in the window pane rather than what’s outside,” one of the men commented.

“Let me ask the landlord to pull those pints. What are you all having?”

The choice turned out to be a local bitter, and I joined them in this.

“What sort of changes do you see the Company making?” asked the man who had a low opinion of the directors.

“I can honestly say that at the moment I don’t know. What I suspect is that we need ways that men like yourselves can work more efficiently. I believe, for example, that travelling along a section of track and staring at a rail is more likely to induce sleep than a worthwhile report on the state of the metals.”

At this there was a chuckle.

“Tis fearful tiring to do that,” one man admitted. “Even at a walk, it can be tedious.”

I said “For the moment, we don’t yet have tools that will do enough to assist the human senses. But I am concerned that we may miss some information that you each observe but is not put into reports. I also think we – the collective we of the whole system – can miss patterns that can help us to avoid disasters.”

“Have you some example?” Troutman asked.

“Well, we know we need to reballast and tamp the track regularly. But I don’t know if we record the extent of work required in relation to where and what type of track or the situation where it is done. It could be that some locations are prone to ballast shifting and we could devise measures to reduce the deterioration.”

“Aye. I’ve seen a few places where a brook runs close to t’track and we’ve needed to do work there a couple’a times.” This was from a man who’d said nothing until now.

“Thank you,” I said. “My task will be to try to find ways to make it easy for you each to bring forward such information. If it increases your workload, it will fail to make an impact.”

“The job’s hard enough, but if you can make that possible, I’d estimate we’d go along with good ideas,” said another.

“Can I ask if any of you has any feelings that there may be dangers brewing somewhere? Managers are often loath to countenance that workers have a sense of trouble, but my experience is otherwise.”

There was silence for quite a few seconds. Everyone took a long sip of beer. Then the fellow who had commented on the ballast erosion said “Couple of times recently, we’ve found fishplate bolts undone, and one case where t’plate was lying by t’rail.”

This was similar to what Oakley had mentioned. “And you doubt it’s vibrations from the trains?”

Another man said “Not seen it before. And I noticed one of nuts was in t’ballast and it were a bit shiny on a side. Like someone put a spanner on it.”

“You didn’t mention that to me,” Troutman said.

“Meant to, but you were up the way, and we had an express coming down, so were stepping off to the side. Look, here it is. I forgot that I put the nut in my pocket.”

We all looked at it. A typical square nut from the fishplate bolts. They all acquired a bit of rust, but on this one, that rust was worn away on two corners where a spanner would press to loosen it.

“Might I have the nut?” I asked. “If I can get a good photograph of it, it would be useful to educate others what to look for.”

“Certainly, Mr. Carr. But I doubt it will help you find who loosened it.”

“Thank you.

“What about the case where the fishplate was gone?”

Troutman said “We put it back right smartish. But trains must have gone across the joint.”

“Was it on a straight section?” I asked.

“As matter of fact, it was.”

“Unless there was a bad deformation in the joint, the wheels would roll over. However, on a curve, especially on the outer rail, we’d likely see a derailment.”

“Aye. And that could mean some fatalities for anything moving at speed,” one of the men commented.

“Mr. Troutman has my card, and Mr. Henry Armstrong at the Works knows me. He was previously an apprentice with me. Please don’t be shy to let me know if you have any observations or ideas. I’ll be happy to give credit – with your permission of course – for any information that helps us to improve our ways to maintain safe operations or to make your jobs easier to do well.”

I bid the men farewell and put on my coat and hat. Leaving the public house, I found myself in a dark and misty street. There was an occasional gas light, but I found myself gripping my cane in case I was accosted. Fortunately, I was no more than two hundred yards from the Market Place, where I found a hansom by the Magdalen Hotel. It carried me to Henry’s house.

I won’t spend time on the rest of my evening, save to say that I very much enjoyed meeting Henry’s wife and children. I spent a couple of hours there, and had arranged the hansom to collect me at half-past nine. Thus I was abed by ten, and confess to falling asleep almost instantly given the busy day I had spent.

* * * * *

The next morning – Wednesday November 13 – I spent almost en-

tirely with a driver and pony and cart going to some local stretches of the permanent way. It was in good shape. Most of the sections were quite straight and there were not awkward gradients. Several times I waited for trains to pass, watching the track under the wheels, particularly the driving wheels of the locomotives.

I paid considerable attention to the joints. They make the particular clackety-clack sound that is so familiar to train staff and passengers. I listened as an express ran by me at one level crossing. Then, since I had been given a schedule by Henry, waited ten minutes for a heavy goods train. The sounds were different. Could damaged rail be detected by sound? There were so many possibilities, but so few practical ways to implement them.

My driver was a young man who couldn't have been more than 14. Not yet old enough to shave. However, he seemed interested in what I was doing.

"You'll not be from around here?" he asked.

"No. I live in Tunbridge Wells."

"Long way to come."

"The Railway has engaged my consultancy to review safety measures."

"Pity they didn't do it before the Thirsk crash."

"You knew someone who was involved?"

"Aye, and t'Railway didn't do much for the widow and family."

"As far as I can tell, the signalman who got a lot of the blame was poorly treated as well, particularly as he was more or less forced to work after declaring himself unfit."

"That be a fact, sir."

After a few minutes, he asked "Can I ask what is a consultancy, sir?"

"It means I have my own business where we are engaged to do certain types of work for agreed amounts of money. Mostly I and my employees make calculations, such as the weight a bridge will bear, or the amount of stone required to build something."

"Your men must be fearful good with figures."

"Actually, my best computers are women. And they work on piecework, as many have children or other responsibilities, so we pay them for a certain volume of calculations. As I was telling one of the railwaymen yesterday, a couple of them are very fast and make more money than some skilled workers."

“Really!” This time the voice was higher. I suddenly had a realization that my driver was actually a young woman.

“Yes, really. Sadly the opportunities for women to make a decent wage in our society are fewer than they should be.”

“T’is only too true, sir.”

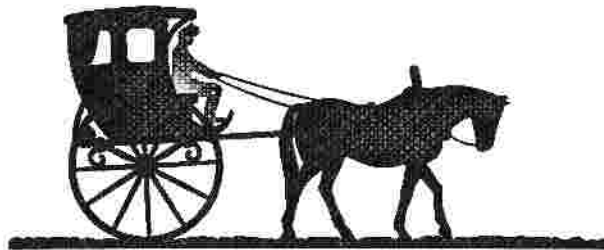
“Before I forget, may I have your name? If I come back, I will hire you again.”

“They call me Andy Heap, sir.”

I kept my expression as neutral as I could in recognizing that Heap was the name of George Petch’s sister. I suspected that Andy was not ‘Andrew’ but possibly ‘Andrea’, if not a fiction.

* * * * *

Notes and numbers



The pony and cart Andy Heap drove had been hired from a firm having a stable near the Market Square.

Having returned sometime after 1 o’clock to the Works, with my conveyance waiting outside the door, I bad Henry farewell. My valise was already in the cart, as I had not been sure of my morning itinerary.

Andy drove me to Doncaster station. It turned out that there was still about an hour and a quarter until my train due to some delay, and fortunately the refreshment room in the station had a sufficient offering of both savoury and sweet goods along with tea that I could purchase enough sustenance to carry me through until I reached home. I still had the lemonade bottle Betty had given me for my first breakfast, and had remembered to fill it with water so I would not be bothered by thirst.

The journey to King's Cross was a couple of hours, then 30 to 40 minutes to Charing Cross and a bit over an hour to Tunbridge Wells. By the time I'd walked to our house it was past seven o'clock. I had my key, and let myself in, but the rattle of the key clearly alerted Amelia, who was in the front room that we call the 'office'.

"There you are! I wasn't sure when or even whether to expect you."

She embraced me before I could unburden myself of my coat and hat.

"Yes. I accomplished more than I expected, and a little more quickly than I anticipated. Though I could have taken another day, I felt it would be more useful to attend to our work here, since I fear the biggest burden is the mass of information to be gathered and organised."

"Are you in need of nourishment?"

As Amelia asked this, Betty appeared from the kitchen and said "There's some rabbit stew Mrs. Baldock's kept warm just in case. We were about to partake ourselves, and it's just come off the fire, so you're here at just the right time."

"Yes, Richard. I can attest it is excellent, having eaten mine over an hour ago."

"Then let me wash up and I will take it in the office, where I presume the stove is warm."

"Indeed, it is very cosy," Amelia said. "And you can serve the apple tart and clotted cream in a few minutes, Betty. I somehow thought Mr. Carr would come around now, which I why I demurred earlier, but now feel some pudding to be appropriate."

* * * * *

After we had eaten, I shared what had transpired with Amelia and we made a preliminary organization of my notes, along with the names of people I had met and talked to.

"You were most fortunate to meet Major Marindin," Amelia commented as I handed her my record of expenses so she could report it in our financial journal. "And surely it was a happy meeting with Henry and his family."

"Yes, and I think that my meeting with the Major will be of some considerable assistance, though we must be careful to only reference

his work that is published or presented in a proceeding. And having a contact in Henry will likely make it easier to get meetings or other tasks organized with people at the GNR Works, of which Doncaster are the main ones for engineering.”

“Have the various pieces of information from this trip, though short, modified your general impression of what we should recommend? I know that it is far too early to begin to record those, but I want to understand where you might lead the investigation.”

I responded “I don’t think it has changed my general feeling that the damaging events – those that cause injury and death as well as material loss – are those where derailments are involved. We do also have collisions, and I am anticipating that we will find a number of origins of those, but those very origins will likely mostly be due to human failures more than technical ones.

“It is, however, the broken wheels and rails that are so difficult to forecast, though it is incumbent upon the entire railway community to strive to find ways to do so.

“Have you made any progress towards understanding the risks to railways of malevolent actors.”

“I managed to go to Tonbridge both yesterday and today, and I am making some progress in finding stories about such events. However, I find more attention seems to be on political events such as the assassination of President Carnot last year. I have not found anything yet that specifically points to malicious damage.”

“Sir Joseph hinted that there had been rumours. I believe I have begun to guess what he was referring to. Also I am inclined to think that organized agents who wish injury to the nation would use explosives to attack symbols of the British Crown rather than instigate some apparent accident on one of the railways.”

“Should you perhaps write to ask him, though it is possible that his rumours arise from gossip and speculation?”

“Indeed, I believe that to be the case. I mentioned that I had a glass of beer with some of the inspection men. I’ve put down how much I spent on their beer even. What do you think of this?”

I showed Amelia the fishplate nut.

“Richard. Am I correct in that this is a ... er ... nut, not a bolt ... from one of those bars that holds two rails together?”

“Indeed. It is the nut from a fishplate bolt, and a fishplate is a bar joining two rails end to end.”

“And this one?”

“Was found in the ballast – the loose rocks that support the ties and therefore the track.”

Amelia looked at it.

“Some of the rust has been rubbed off here and here. Oh. That would be because someone applied a tool – is it a spanner? – to unfasten it.”

“That is the general conclusion of the inspection men, with which I concur. The question is who would loosen it and why.”

Amelia asked “Are there perhaps staff who have been dismissed or have similar cause for grievance against the railways?”

“We had better put that on a list of discreet questions to be asked. As I consider that, it is likely that Henry Armstrong would be a good person to ask, since he will have some access to the information and also be aware of the need for discretion.”

“It may be worth writing to him without delay, Richard, as acquiring the information will take some time.”

“Yes, I will do so in the morning. However, I must add that I was conveyed about yesterday in a pony and cart to observe the main line track by a young man – though I suspect it may have been a young woman in disguise – who was quite eloquent in pointing out that the railway did not give much assistance to the family of the guard killed in the Thirsk crash three years ago. I suspect my driver to be connected to that family.”

“Oh dear. You think they may be contemplating doing damage to the railway?”

“Possibly. Someone certainly is loosening the fishplates. The men told me one was completely missing, but it was on a straight stretch. The wheels will keep going more or less straight so no crash occurred. However, on a curve or a set of points, who knows?”

“It is a worrisome thought, Richard.”

“I have also thought that we might, within the small group of our consultancy, think of what we would do, were we to wish to cause damage to a railway. That is, to put ourselves in the role of malicious agents to suggest vulnerabilities.”

“That would focus our minds on possible dangers, and it may in turn give an indication of how to prevent damage.”

“Well, my dear,” I said, “we will continue this work tomorrow, and if our colleagues on the High Street are available, I will suggest

we start thinking like a gang of criminals. Unfortunately, I doubt it will give us a good estimate of the likelihood of damage by such crooks, but it will allow us to think what might be the manner of attack.”

* * * * *

“So we are to think how we would damage the railways?” Gus asked.

“It is, I believe, one way we may uncover possible threats that are less obvious otherwise.”

After a few seconds, Parks, who was now my partner in the consultancy, said “And once we have raised the possible threats, we can think of their remedy.”

Amelia had joined us in the High Street offices, so there were four of us involved in this effort to discern risks. We had decided to let Victor Crane take primary responsibility for our assignments outside of the safety review. Roger Parks was senior to him – indeed he was my partner and Crane was still an employee – but in a quiet discussion Roger and I had decided to let Crane organize the work. This did not mean he would tell Roger what to do. More that he would keep track of what we had to do and suggest how it would be done. In all likelihood this would be tantamount to telling Roger what he should do, but in our team we seemed to be able to trade tasks informally with a minimum of fuss to a general success.

We felt that this arrangement would allow Roger more attention to the safety review by relieving him of many of the planning and management tasks. Thus Amelia, Roger and Gus joined me in considering our challenge. Gus was being included in this to give him experience in an assignment that was different from our usual ones. I believe Amelia felt he deserved a chance to show his abilities and imagination. Given I had known him from birth, I tended to overlook the fact he was now a man, albeit a young man.

“Shall we start with the moving equipment, then consider the track and signalling,” I said.

“What should we consider as the main targets to damage?” Roger asked.

“One could do a lot of damage by foiling the safety valve on the boiler of a locomotive,” Gus said. “However, there are pressure

gauges and any good engine man knows how quickly his locomotive comes up to steam. The sound of higher pressure in the pipes is different.”

“Yes. I think it would be difficult to create the right conditions to ensure a disaster before the tinkering was discovered,” Parks said.

I responded “Then the two main other possibilities in my mind are the brakes and the rotating parts, that is, the wheels and bearings, which I would consider together.”

“Would the couplings not be a vulnerable part?” Amelia asked.

“In principle, yes,” Parks said. “And for some trains it might be a target, but most now have vacuum brakes that are held OFF by the vacuum. If a train breaks apart, the hoses let in air and the brakes go on. It would create a cost, possibly a grave one, but is unlikely or at least less likely to be catastrophic.”

“Unless the brakes themselves are compromised. Is that what you are saying?” Amelia asked.

Parks responded “Yes. Combined with brake failure, a broken coupling would be a serious problem. For example, at the top of a hill. There was the Round Oak crash in August 1858 where broken couplings let part of one train run downhill into another with much death and injury. There were issues with the couplings – in fact several broke due to a heavy train and were not properly fixed, and later it was discovered that other couplings had faulty welds. However, the trains at the time did not have brakes on all waggons, and the guard was even charged with manslaughter, but was acquitted, though I think the Railway Inspector would say that was due more to public opinion about a working man than the facts shown by the physical evidence. However, I think that with vacuum brakes that apply when the vacuum is lost, assuming they are in working order, couplings are not a way I would attempt to damage a train. The brakes themselves are a more accessible target.”

“I agree,” I said. “although it is possible that one could consider couplings if one were to consider an attack on some of the more primitive goods trains. Though today, given continuous brake systems have been compulsory since the Regulation of Railways Act in 1889, that is likely only possible on some private mine or quarry railways.”

“Would we not be better to look at what features of a train make it easier to damage?” Gus asked.

“Well,” I said, “the March 1890 crash at Carlisle was due to the driver mixing up the settings of his control, as he had a dual purpose valve to handle rolling stock that used a vacuum to either set or release brakes because the LNER had two types of waggons. We should probably recommend some sort of precaution or mechanism to prevent mixing of systems, and also to hasten the decommissioning or replacement of older systems. But the fact that a driver can mix up things by confusion suggests a determined miscreant might succeed in causing grief.”

“What about the mechanisms to set the brakes off for shunting idle waggons or carriages?” Gus asked.

“That would seem a likely attack for someone who knows what they are doing,” Parks responded. “They would, however, likely have to act upon a number of handles or controls, one or more for each set of wheels. That makes detection more likely.”

I intervened. “Is it sensible to consider how to render such acts even more visible? For example, a wire with an identified seal in soft metal. That could be broken in an emergency, but would otherwise show that the brakes were in the proper running condition. Even some bright paint on the control handles would allow observation from a distance that the setting was correct, especially if some standard positioning was adopted, though no doubt getting agreement on such standards would be a challenge.”

“A good point,” Parks answered. “Should we record our discussion on this?”

“I have already made some abbreviated notes,” Amelia said. “I will organize them in the next few days and let you each review them. If I double space my notes, that should allow for your comments, but please add your initials so we can consult each other to prepare the final synopsis.”

“Thank you, my dear. That will be extremely helpful.”

“Perhaps you’ll all let me catch up on these notes for a moment,” Amelia said.

“I’ll make some tea,” Parks offered.

When the tea was ready, I continued “To give focus to the issue of brakes, I think passenger carriages are the most likely target for those wanting to damage the railway’s position. And passenger carriages – especially for mainline services – are often left in sets that make up regular trains. They are not shunted like goods waggons,

so possibly they are a more difficult target.”

There was a further pause as we all drank some of our tea.

“What about wheels and axles,” Gus asked.

“Richard, did you not point out to me one time in Canada a waggon, of a type you called a box car, that had caught fire because of the wheels?”

“Yes. It was a condition called a ‘hot box’, perhaps called that more there than here. The axles carrying the wheels pass into journal bearings that are housed in a box-like container that is packed with cotton or other fibre that is stuffed with grease. Here we sometimes use oil. The lubrication must be checked and replenished regularly, otherwise the friction of the bearing will heat it and cause a fire, or even melt the axle or bearing and cause a derailment.”

“Perhaps putting sand in the box would be a quick way of causing some serious damage?” Gus said.

“Possibly,” Parks responded. “It would partly depend on how abrasive the sand chosen was, and how easily it got between the bearing surfaces.”

“Alternatively, would pouring light spirits into the box not wash away much of the grease or oil and cause a quicker failure?” I said.

“Let me write these down. You are all so full of ideas,” Amelia laughed.

We went on to discuss how one might damage the wheels by nicking them with a chisel or heating them with a blowtorch then quenching them, but Gus rather stopped that line of thought by asking “If one were to go to that much trouble, it would be simpler to find some explosives. Aren’t we trying to think of measures that don’t require a lot of resources, and which are not initially obvious?”

This brought us down to earth. In my own mind, the idea that explosives might be employed moved the focus of my concern from disgruntled individuals to organized agencies, such as organized gangs or foreign governments. That was a different level of threat, and one we, as engineering consultants, were unlikely to be in any position to investigate or counter effectively.

“Shall we move on to think of the fixed assets that might be attacked?” I suggested, placing the fishplate nut I had been given in Doncaster on the desk.

“My goodness, is that a fishplate nut?” Parks asked.

“Indeed it is, and it was found in the ballast beside the main line

track near Doncaster by one of the inspection gangs. Note how the rust has been rubbed away on two opposite corners.”

“Someone’s used a spanner on it,” Gus observed.

“Indeed. And, Gus, I’d like you later today to find a photographer who can get some good pictures to document that.”

“There’s one down the street I could try,” Gus replied.

“Make sure that the spanner marks are visible, and several angles. And, of course, get receipts for the costs, since they become part of our bill.”

“Was there any consequence?” Parks asked.

“Not obviously,” I replied. “There were several cases noted, including one where a fishplate was lying on the ballast. But it was on a straight section of track, and at least one train went across the joint without apparent damage, and definitely no derailment.”

“I cannot see that lucky outcome had the plate come from a curve, particularly on the outer rail,” Parks said, like an echo of what I had said earlier.

“Nor I,” I added. “Which is why it behoves us to think of ways to discover such attempts early or stop them. It seems that it is quite easy – perhaps too easy – to remove the fishbolts. And there is likely too much track for the railways to reliably detect every loosened plate. Possibly in future there will be other fastening methods that are more difficult to undo.”

Parks responded “About a month ago when I went up to London to that meeting about the calculations we were doing with Kirkaldy’s people, there was a mention of a man named Goldschmidt who has a way to generate molten iron from a powder of mixed metal and metal oxides that is set alight. There is talk he may be able to weld with it.”

“It would certainly be more difficult to undo,” I said. However, my thoughts were that it was too early to recommend, and moreover might not allow of easy dismantling of rails as fishplates did. Still, it would be worth watching how the idea evolved.

Amelia asked “Are there other ways to damage the track?”

“It probably is fairly easy to put a brick or something like it in a set of points,” Parks said. “The points are often inspected more closely, and in winter, gangs sometimes go out with blowlamps to unfreeze the workings, which can freeze or get iced.”

“But something done shortly before a train arrives would be dam-

aging, and could possibly be done quite easily?" Amelia asked.

"Yes," I admitted. "And there are possibly a number of ways to interfere with the mechanisms that change points that are operated from signal boxes."

"And the same sort of interference could be made to signals," Gus pointed out.

"Can we look into what would need to be done to do such damage, Gus? I suspect that it may be quite difficult to make an alteration both easily and effectively without changing how the levers in the signal box feel to the operator. Perhaps changes in tension on cables or resistance to movement can reveal attempts to tamper with signals or points. But if we are to make good recommendations, or even suggest them, we need to have some basis and not conjecture. So I'll ask all of us to try to find out what we can."

Parks said "Perhaps we can find a disused set of points and or signals that we can use for experimentation. Do you know, Richard, if the GNR or NER might be able to cooperate?"

"We can but ask. Amelia, remind me to write."

"I will draft a letter. Should it be addressed to Sir Joseph?"

"I think to Oakley, with a copy to Sir Joseph, asking his opinion on the value of some experiments and evaluation," I said.

"Could someone do something fairly modest to the ballast that would derail a train?" Gus asked.

"There have certainly been derailments due to ballast shifting," I said, "However, I'm not sure I know of any that caused a disaster. Shifting generally occurs slowly, or else in conditions like floods or from wave action along seaside tracks. If track inspection is properly carried out, ballast shifting should not be a grave danger."

"Would blocking a culvert be an easy but sufficiently damaging attack," Parks mused.

"You would want to push water under a small but important length of track to undermine it," I said. "There likely are not a lot of places that make such an attack feasible. If we can find any, we can suggest modifications to render them less vulnerable."

"Would that be done by more frequent inspection, since you mentioned the importance of that?" Amelia asked.

"Not necessarily," I answered. "Culverts are for allowing water to move from one place to another, so adding more ways for the water to be taken away means an attacker has to work much harder.

Almost all our efforts will be to find the least expensive measures that make the cost of the attack high.”

Gus exclaimed, “Oh. I hadn’t thought of it like that. I was trying to think of ways to absolutely prevent an attack. But clearly there are always going to be ways. The railways can’t afford perfection, but they can try to find inexpensive ways that almost do the job.”

* * * * *

We spent a full morning on our discussions, and it was well after one o’clock by the time Amelia and I walked home for our dinner. As we started up from the High Street I said “I hope that my enthusiasm for getting that exercise more or less complete in its first attempt will not upset Mrs. Baldock because our food is over-cooked.”

“I knew that we were going to try to do that this morning, and I am well-aware of your enthusiasms and that once you start along a train of thought you do not divert easily. So I suggested that Mrs. Baldock prepare a meal that could cook slowly in a moderate oven and be ready any time after one o’clock.”

“It pleases me greatly that you both know me well and do not chide me too heartily for my lack of attention to the clock when I am deep into my deliberations.”

“The concentrated effort lets you and the others get results, Richard. And we know each other well enough that I would speak up if I felt you were truly beyond the hour.”

“Thank you, Amelia. Your watching out for me is a great comfort.”

* * * * *

That evening there was a music recital in the Great Hall. I confess that I fell asleep in the performance. Amelia said she wondered if she should wake me, but as I was not snoring, she did not disturb me.

“I apologize for falling asleep,” I said as we walked home.

“Your days have been busy, so you need not apologize. You weren’t snoring, nor leaning against a neighbour. I felt you very slightly against my shoulder, which I do not mind at all. I hope the nap left you refreshed.”

“Indeed it did. And I think the music helped. Do you consider the performance to have been a good one?”

“I enjoyed it, but as you know, I do not have a great knowledge of music. And, if I am honest, I found myself thinking of a number of things that have transpired this year.”

“Concerning us?”

“No. In fact I don’t think I thought directly about us all evening, which is perhaps a good thing, since it means I am not overly indulging our own situation. But because we were in the Great Hall and I saw some notices for theatre productions, I started to think of the uproar earlier this year about Mr. Oscar Wilde. His play, *The Importance of Being Earnest* was touted as possibly his best, then all the scandal erupted about his ... er ... interest in men.”

“A very unpleasant affair, I fear.”

“Yes. I’m afraid I spent some time at the library the other day reading about the trials. I found it troubled me in several ways.”

“I must confess to unease about it also.

“But here we are at home. Shall we have some tea and then retire?”

“Yes. I think Betty will have left a kettle at the back of the stove so it will be easy to bring it to the boil.”

* * * * *

Not long after we were in our bed. Unlike many of our peers, Amelia and I share a double bed. I have overheard Betty mention to cook that other servants in the neighbourhood think this unusual, but that for Betty it has the advantage of less work to be done.

I offered my arm and Amelia curled in against me.

“Richard. When I mentioned I had been reading about the trial of Oscar Wilde, there was evidence that he shared a bed with other men. That seems very strange to me.”

“To me also. Yet at times in my life, I have heard mention of men who prefer the close companionship of other men. For myself, I would be happy to allow them their privacy, so long as they do not impose their interests on others.”

“The law was changed, was it not, in 1885 to forbid any intimate contact between men?” Amelia asked.

“Yes. But no mention at all was made about women. Yet I am almost certain that several pairs of women I have known over the years were very close, and it would not surprise me that there are those who prefer their own gender for physical contact.”

“Yes. I, too, have met women who talk about their ‘companions’ with an air that suggests more than simple sharing of time. Like you, I am happy to leave them to their own choices as long as they do not wish me to join them.”

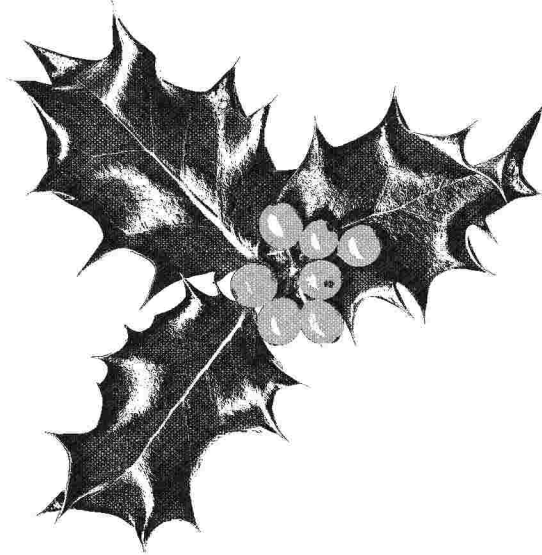
“Perhaps our society is too closed to the possibility that people have a variety of ways to love and be loved. Adam Brant, my Mohawk assistant in Canada who you have met, told me once that there are members of his tribe who are referred to as two-spirits because they are drawn to their own sex, or can find feelings for both men and women. It seems they are accepted thus, and not ostracized as in our own society.”

“It seems, Richard, that we have much to learn.”

She kissed me and rolled out of my arm, but then moved a little so her derrière was against mine. We often slept thus. No doubt that would scandalize many of our neighbours. So much of society seems to seek to be scandalized by actions or inclinations of others that pose no harm to them, I mused as I drifted off to sleep.

* * * * *

Work and wassail



The next few weeks were spent in Tunbridge Wells. I could easily have spent the Railway's money on visiting different people and places, but I believe we were much more efficient by preparing a short pamphlet that outlined some of the data that would allow better understanding of the causes of damage and injury related to railways and their operation. Despite the busy Christmas season, we were able to get this printed locally. It was two quarto pages and suggested some of the tables of information that might be relevant, including suggested units of measure. The essence was that we would collect and collate information we could find and those who contributed would receive a copy of the collected information. There was a strong emphasis on strength of materials, rails in particular, though we referred to it as our 'Accident Data' form.

I had raised this possibility at lunch with Oakley and Major Marindin. Amelia and I spent almost a week – indeed it was the 22nd of November before we felt ready to approach a printer. Amelia brought many improvements. One of her first comments was

“I don't think we should insist on the units to be used for any of these tables, Richard. If our correspondents have to make conversions, it will dull their enthusiasm.”

“You are right. And it may lead to errors,” I responded.

Later, she said “Should we have some questions that are more open? For example, should we ask if we have missed any important category of information? Also, should we ask for information that cannot be put in numbers?”

“You mean qualitative or categorical information?”

“Yes, but perhaps also to ask if they have intuitions about the causes of damage or accidents that they cannot yet support with concrete information.”

“That will need some introduction, so we are clear on our hopes or expectations,” I answered.

“We should also say that such ideas will not be part of the distributed data, but could suggest directions for further investigation.”

“Indeed. Thank you Amelia.”

This encapsulation of our discussion omits some of our more spirited exchanges, which, in the nature of such things, seemed to be more heated when concerning nearly trivial matters of spacing and punctuation. On top of this, when we took the material to the printer, he asked if we wanted the two pages back to back on a single sheet, on two separate pieces of paper, or printed as two pages side by side on a double-sized sheet. After a day’s delay, we actually had the form printed on a double-sized sheet, but set so we could fold it to have two one-sided pages, like a small book. The reasoning was that then we could suggest that comments could be written on the blank back of the sheets.

While we only needed a couple of dozen of these forms, I had two hundred printed, as the costs were preponderantly in the type-setting, with setup of the press as the secondary cost. The cost of the actual printing after the first 50 items was almost negligible, and I could foresee using the sheets as an introduction of our ideas to others, even if they were not actually used to record data. This turned out to be a good idea, as more than 100 were eventually sent out, with many serving to advertise the concept rather than gather data. We actually never distributed the last five dozen, and they eventually served to light the stove.

* * * * *

In the first few days of December we sent out around three dozen of the forms. I included Major Marindin, of course, but wondered

whether he would feel the Inspectorate could share data. As it turned out, we got a letter by reply from one of the staff. We never did confirm whether the Major was behind this letter, but it helped us immensely.

Inspectorate of Railways

December 12, 1895

Mr. Richard Carr, Consulting Engineer
Tunbride Wells, Kent

Dear Mr. Carr,

Could you send us a dozen and a half of your forms for recording data relevant to the accident data, etc.? We believe it would be most useful for us to forward them to our correspondents at the railways to get their most up-to-date information and to avoid transcription or other errors should we send you copies of information that we have received to date.

It will be my pleasure to confer with you when you have received completed forms to ensure the information is as complete as possible.

Sincere regards,

Joseph Culloden,
Assistant Clerk

We replied immediately with the requested forms. Culloden's suggestion meant we did not tread on any sensitive toes, but the Inspectorate's status with the railways served to encourage the response we desired. I believe we may even have got more information than could have been supplied from the Inspectorate files, as later correspondence suggested much of the information was additional to what had previously been provided.

All this activity, of course, rendered us frequent customers of the

Post Office, on top of which we sent out Christmas cards. Amelia had persuaded me that the consultancy should also send cards to our present and former clients. Given that we had several contracts at the moment that Parks, Gus and our computing ladies were executing, and Amelia was rather busy with me and at the Library, we were glad that Parks suggested that Hilda would be willing to undertake the cards this year. Without hesitation, I agreed to this, but on condition that she get a sovereign Christmas bonus.

* * * * *

In this year of 1895, Christmas fell mid-week, which meant some people got or took more days of holiday than was customary so that they could travel to be with their families. Because of the need for food and fuel to be distributed, others would have to work awkward times and have only the Christmas Day to their private enjoyment.

Amelia and I would be busy. We were going to host my family and friends for a buffet tea on the Sunday, December 22. We carefully cleared the 'office' as much as we could, having decided to use our desks upon which to place the food and drink. We carefully boxed our railway papers and put them safely away in our bedroom, as getting them mixed up or lost would be a great nuisance.

Besides the 'office', we would use the parlour at the back as well as the kitchen as spaces for people to sit and converse. It was not ideal, but all those invited were family or close friends. We included our staff, the computer ladies and their husbands, and Michael and Mabel Buckley, Amelia's cousin from East Grinstead. We would be also be dining with these last two on the 28th, which was their 12th Anniversary.

On Christmas Eve, we would attend a carol service at Trinity Church. However, we decided that we would not attend a service on Christmas Day itself, when we would be joining family at the house of Ethel and Colin Black. There was some mirth when they married in 1888, as Ethel's name was White. Colin is a plumber – much of my family is in the building and hardware trades because of the ironmongery. Colin and Ethel managed to buy a fine house in Southborough. It was in need of some refurbishment, which through business and family connections they easily arranged. In 1890 little Harry appeared, and in 1892 daughter Susan, so they

have been busy, However, this year will be their first to host the family Christmas.

Ethel has retained most of her activities in the ironmongery, where she is the main buyer for the shops of items like pots and pans and cutlery. There is a growing number of household aids such as carpet sweepers and improved lamps, and Ethel has a sharp eye for what will sell and what will languish on the shelf. Since Henry's plumbing business is also doing well, they have a nanny for the children, a cook, and a maid, as well as a weekly charlady and an outdoor man two mornings a week. Otherwise, I doubt Ethel would be able to maintain both the house and her business activities.

* * * * *

Our "At Home" was a great success. We almost had to throw people out as the evening closed in. The staff were allowed to simply put away those unconsumed items that might attract the attention of vermin or our pair of cats and leave clearup for the Monday morning. Then we all retired, not at a particularly late hour, but with a definite readiness for our beds.

I offered my arm and Amelia curled in against me and we pulled the covers around us, for the night was cool.

"That was a very successful party," I said.

"Everyone seemed to enjoy themselves greatly. Mabel and Michael at least left in good time to catch the last train to East Grinstead, but even they had mentioned that they intended to take an earlier one."

"Is there anything particular we need to do before Christmas Day?" I asked.

"In regard to the house and its operation, Hilda has, as usual, got everything well in hand. I have had all our clothes taken out to air or be washed and ironed. We sent some to the laundry, as our wash routine may be out of the usual time and routine with the party and with some adjustment in our attire for different occasions."

"Do you think we will find some time to continue our organization of the railway safety information?"

"I hope so. Interruption of our work for more than a day or so does, I find, mean I have to review to recuperate my understanding of where we are. Does that not affect you also, Richard?"

“I confess it does. Similarly, my calculation skills need practise. I can remember how to do them for the most part, but I have to think too much when it has been a while since I have been regularly computing. Like machinery, we need to be kept working so that the oil and grease of the mind do not dry out.”

“Talking of machinery, Richard, I must see to the repair of my watch. I believe the spring has broken.”

“They can be easy to overwind.” I ventured.

“Indeed, though I do not think that was the case.”

“You could take it to that fellow Plaisted. You know, the family with the two little girls, May and Lily.”

“Oh yes. Mrs. Plaisted was telling me they are worried about May’s eyesight.

“Yes. I will take my watch there to see if he can repair it. Though, you know, that watch has never kept good time. I needed a watch for my nursing practise – it has a second hand, but also I needed to be on time for my engagements – and I could not afford the best. It is possible that repair will cost more than a new watch.”

“I will be happy for you to have a new watch. You are never extravagant, and our resources are quite adequate.”

“Thank you, Richard. I will look to see what is available.”

“If you need a watch temporarily, there is the one I got Geraldine in 1867 for Christmas, but it is engraved, so perhaps you would prefer not to use it.”

“I had forgotten that watch. Is it not in one of the drawers of your desk?”

“Indeed, that is where I last saw it.”

“Well, I’ll be happy to use it until I see one I really like, rather than purchase one under the pressure of need. But I think I’ll take my broken one and Geraldine’s watch and obtain Mr. Plaisted’s opinion about repairing the first and cleaning and lubricating the latter.”

“Excellent. I will find Geraldine’s watch for you first thing in the morning.”

* * * * *

It was mid-afternoon of Monday, December 23, when Amelia returned from some errands. Coming into the office, she seemed quite

elated.

“Richard, I was most fortunate. Mr. Plaisted was able to clean and oil Geraldine’s watch while I shopped for some small gifts for different family members. And he will be able to repair my watch with parts from broken watches, though he concurred with my opinion that it is not to be trusted to keep very accurate time, though he said it is as good as many of the commonly available models. Thus I asked whether Geraldine’s watch was better, and he seemed surprised that I would ask. Apparently, it is a model considered to be rather fine.”

“So is it then worth keeping both watches? And should we consider selling them and getting you one of your own that is of quality?” I could not see that Amelia would need two watches.

“My thought was that I would make a gift of my old watch, once repaired, to one of the nieces when they reach an age when a watch would be useful. There are already one or two candidates among the family.”

I laughed, for Amelia had touched on the reality that my family had a number of junior members who were soon to reach an age where time was important to daily life.

“A capital idea, Amelia. I should have thought of that myself.

“But what of Geraldine’s watch?”

“Richard. Would you be content with my using it? I see no necessity to purchase a new one. I knew Geraldine, and she was a fine woman. Unless you are uncomfortable with my use of the engraved watch, I will be very pleased to use it.”

“That gives me much happiness,” I replied, in what felt like an understatement.

* * * * *

Christmas rain



We had learned that the Railway Inspectorate would release the report to the Board of Trade on the St. Neot's accident on Christmas Eve. I decided to send Gus to London to the Inspectorate Offices to obtain a copy for us.

He delivered it around two o'clock to *Sans Pareil*, and it was already raining.

"They've made an error in the date. They have it on December 10, rather than November," Gus said. "But the amount of work just from November is quite prodigious. I am quite surprised how much measurement and reporting has been included."

The date error would no doubt be an embarrassment. In any event, Gus had brought us the document and we would be able to use it. We got cook to heat some soup – Gus had come right back without lunch, even though I had told him he could get a decent meal and get the receipt.

The weather turned quite nasty Christmas Eve, with a lot of rain. A few years before, we had bought some raincoats of the Macintosh type. Furthermore, unwilling to lose my hat nor have my head soaked, I had purchased a Sou'Wester as well, and Amelia had followed my lead, despite the discordance with the contemporary fashions. While we had umbrellas, I have never been happy that once wind accompanies rain, an umbrella is more liability than asset.

In any event, our rain garments were well-employed in our excursion to the carol service. On our return home, we hung our raincoats and hats in the scullery to dry. Betty and cook had left, as we had

given them leave until the night of Boxing Day to visit family or friends.

It was about half past nine when we got home from church, and I moved the kettle from the scullery stove where it was keeping warm to the gas stove so we could have a cup of tea. There was plenty of food in the house, but we satisfied ourselves with a sausage roll and mince pie each.

“Would you like a glass of sherry or something else, my dear?” I asked.

“A small glass of port please.”

“A good idea. I will join you.”

“Richard. We need not rise early in the morning, but I feel we should avoid too great a divergence from our regular routine in rising.”

“Well, my dear, I cannot remember when I have still been abed, except when ill, beyond nine o’ clock. But I agree that too late a rising can upset one’s constitution.”

“Then let us aim to breakfast at that hour. Cook says there is some bacon and some eggs, but we could also choose something lighter, such as some porridge. There is milk in the pantry, and also some Demerara sugar.”

“A lighter meal might be sensible given the almost certain over-indulgence of later in the day.”

“Richard. When shall you and I exchange our presents for each other?”

“Do I detect a hint of impatience to learn what I have got you?” I teased.

“Even if that were the case, I could never admit so.”

“Why do you not then open that package that is on the seat of that chair by the kitchen table?”

“Oh. You wonderful devil. I had not noticed it there.

“But I must get you yours. Wait while I do so.”

Amelia took a candle on a portable holder and disappeared. I heard her go upstairs to our bedroom, open and close a drawer, then return. She came into the kitchen and closed the door against loss of warmth. I was handed a small package wrapped in red tissue. Interestingly, my present for Amelia was wrapped in green tissue.

“Shall you open yours first?” I asked.

“All right. I am most curious, but I wish to save the tissue, so you will have to be patient before you open yours.”

“And, do I presume correctly, that I must avoid tearing the tissue surrounding your gift to me?”

“Of course you must,” Amelia answered coyly.

She proceeded to unwrap her present, which was the size of a large book. It was, in fact, a sort of satchel or briefcase, twelve inches long by ten high and just under two inches thick. It had a central divider and a full flap top with two buckles, a carrying handle plus two rings, one at each end, to which an adjustable shoulder strap could be clipped with spring fasteners.

“Oh my, Richard. It is perfect for my excursions to the library. A sort of super-reticule. And for travel, it can hold sandwiches and a flask of water.”

“If you look inside, in one of the divisions I had the shop attach a half dozen rings, three per side so that you can tie in dividers, or else fasten a money purse or pencil case. I was concerned that putting items loosely in the satchel would make them difficult to keep organized.”

“Richard, you are always so thoughtful.” She gave me a kiss and a hug. “But you must open yours now.”

My present was about two inches by one by 9. It turned out to be a Waterman fountain pen.

“Ah, how wonderful. As you know, we almost always work with pencils when taking notes, as ink and pens are so messy. But there are occasions when I need to prepare letters or sign documents when travelling. This is a most wonderful present for me. Thank you, Amelia. A most appropriate gift.”

“We seem to have both made good choices. I will love this satchel, Richard. It will replace my reticule, I think.”

“If you look under the flap, I had the leatherworker burn your name and address there.”

“I doubt I will be foolish enough to leave it anywhere, but that is still a good idea, Richard. And the strap will allow me to carry it over my shoulder with my hands free, including when I ride my bicycle.”

In good spirits we checked the scullery stove, turned off the gas light and ascended the stairs to bed.

* * * * *

We had planned to have a hansom take us to Southborough to arrive about noon. It is about two and a half miles from our house to that of Colin and Ethel, so we had arranged for the cab to come a little before half-past eleven. However, just after eleven o'clock there was a loud knock on the front door. When I opened it, I was met with a blast of wind and rain and a very bedraggled child of about ten years who I ushered into the hall and shut the door.

"Mr. Carr, me Dad sent me round to tell you the wind and rain's so bad the horse won't leave the stable. Can't get her to step outside. Dad's right sorry and apologizes, but he won't be able to take you, and he suspects most others are not working either."

I responded to the child "Well, it is most inconvenient, but at least you have let us know. I wish you a good Christmas. Please convey that sentiment to your family."

I held the door firmly as I opened it to let him out again, as I feared it would blow in and hit the wall. The weather was quite dreadful.

Amelia appeared at the top of the staircase. "What was that, Richard? I got a fright that our clocks were slow and that it was the hansom."

"I'm afraid, my dear, there will be no hansom, as the horse has balked at stepping out of his stable, and we must consider what we are to do."

"Well, somehow we must get there. Could we ride our bicycles?"

"I fear the wind too strong, and we would get very wet, as pedalling will open the front of our coats to the rain. And we may find we cannot make progress against the wind, else slip on ice."

"Then walk? It is not beyond three miles, is it?"

"About two and a half. We had better get busy. I suggest we use our rucksacks and carry a change of clothes, including underwear and shoes. We will want our rain clothes and some good gloves. Perhaps even a change of those."

"We must not forget the gifts. Nor the bottles of sherry and port," Amelia added. "And I will put in a nightgown. If this weather does not let up, we may be forced to spend the night."

"Yes. Even if we have to sleep on the sofa or the floor, it would be better than risking ice and snow, and it feels that we might get that too."

I went to the attic and found the rucksacks, and while I did so, Amelia cleverly remembered we had a pair of oilcloth sheets we used to lay on the ground or else some rough table for picnics. They were waterproof. We used these to wrap the gifts and our change of clothes. Our spare shoes I put in canvas bags I had acquired somewhere and which I kept with the rucksacks for this purpose. They kept any dirt that was on shoes from soiling other items in the rucksack.

It was twenty to twelve when we were ready to leave. We would arrive a bit later than we intended. We made sure all the gas lights were off and the scullery stove set to its slowest setting. Even if we returned tonight at a reasonable hour, it would likely be out, but it made no sense to leave it burning fiercely.

At the front door we put on our rain gear and I helped Amelia to put the rucksack on her back.

“Ready?” I asked.

“I think so.”

I opened the door and once again there was a wet blast. We exited as quickly as we could and huddled in the doorway while I made sure the door was properly locked. We started down the pavement, and Amelia put her arm through mine. The rain was hard and steady, with a hint of sleet or snow every so often. Gusts of wind meant we had to lean to stay on our feet, but we made steady progress, and before half-past noon were knocking on the door of Ethel and Colin.

“There you are! Come in, come in and let us get the door shut,” Ethel greeted us. “We weren’t sure you’d come. I was wondering whether Mama and Papa will be able to come, but they walked to the shop and telephoned from there that they are walking. We fortunately have the telephone here, as Colin often leaves here directly to the places where he has work.”

I explained our tardiness, but Ethel and Colin simply expressed relief that we were there. Colin said “I was beginning to think there’d be an awful cartload of food that might go to waste.”

Amelia said “Perhaps we should find a place to hang our wet clothes and unpack the rucksacks. We brought a change of clothes, including shoes, and I think we’d be wise to at least change shoes and stockings, since they are wet.”

“Of course, of course. Come in the kitchen where it won’t hurt if you drip on the floor. What a day!”

The kitchen was, of course, quite busy with meal preparation. We were introduced to the cook, Mrs. Jepson, and the maid, Audrey. The nanny had been given leave for Christmas, we were told.

Mrs. Jepson said "We have some clotheslines in the scullery where you can hang your wet things. We've already done the chopping and washing of the food, so they won't be a big nuisance to us."

Just then there was a knock on the front door. Maude and James had arrived. They had had to walk too, as we knew, and were quite soaked.

Ethel said "Mama, you must take off those wet things, come upstairs and I will find you something to put on."

"You'll have a fat chance of that, my girl. I'm bigger than you."

"But I did keep my dresses from the time I was expecting. They won't be fashionable, but at least you'll be decent and dry. And I recall our feet to be of roughly the same size."

Colin jumped in "Father, I think I have some leather slippers, and I can find you some socks. I've some new overalls for work that might fit you too."

James said "Richard here seems to have managed to keep dry. How did you do it?"

The story of the recalcitrant horse was repeated and that we had been out last night so knew it was bad weather. I explained that we had brought a change of clothes, knowing we would get wet.

"I should have thought of that too. The walk is not so far, but getting up Quarry Hill is quite arduous. And that wind and sleet. I was fearful we'd not make it."

"Well, we're all here now, and there's plenty of food and drink," Colin said. "In the worst case, we find places for all to sleep tonight and see if things are better tomorrow morning."

* * * * *

Despite the inconveniences imposed by the weather, we had a very agreeable day. Dinner was at three o'clock, and was so leisurely that it was dark outside when we moved from the dining table to the parlour to do the gift exchange. This was coordinated by Ethel, who reached into the pile under the Christmas tree and took one parcel at a time and gave it to the recipient, announcing who it

was from. We then all watched the unwrapping to see what was then revealed. Maude and James' parcels had by now dried out. I was apprehensive that the moisture might have done damage, but fortunately only the wrapping paper seems to have suffered. Cook and Audrey were invited to join us, and everyone had a glass of something to toast a Happy Christmas.

Of course, the main excitement was with the gifts for the infants. Susan was too young to really appreciate what Christmas presents were about, but Harry was full of youthful enthusiasm. Amelia had thoughtfully got a stuffed cloth doll for Susan. There is a fashion for fancy porcelain ones, but Amelia pointed out that they are far too fragile for child's play. For Harry, I had found a gyroscope. It was possibly a toy too advanced for his years, but it was like a spinning top and the particular one I found was of a robust design. In fact, it was likely not very suitable for any scientific instruction, having rather heavy bearings. However, it also came with a small tower on which it could be placed once spinning and it would precess about this tower, seeming to defy gravity. It fascinated not only Harry, but also his father, and they worked it together, which pleased me greatly.

Susan also was taken with the doll, and kept hold of it.

The adult gifts were small practical items. Socks, ties, gloves, ribbons, combs, a coin purse, shoe horn, button hook, braces, collar studs, cufflinks, handkerchiefs. All were well received.

By now it was seven o'clock. Colin had the good sense to ask "Should we start to think of arrangements for sleeping, assuming that the weather is still too inclement to think of walking home?"

Amelia said "Richard and I brought a change of clothes and some night wear in case it would be imprudent to try to get home tonight. Unless there are hansoms abroad, which I doubt, I think we should stay."

Maude added "I wish we'd thought of that."

Ethel said "I think Richard and Amelia can use Nanny's room. Amelia can take the bed, but I'm afraid we'll have to find some extra carpet and put Richard on the floor."

I said "At the risk of scandalizing all of you, I will admit that Amelia and I shared the lower bunk on the sleeper to Edinburgh on the 31st of October. I would estimate we can manage with Nanny's bed."

Maude gave me a knowing look and said "Good for the pair of you! It will give the younger generation cause to examine their own affections."

Ethel, with a slight show of awkwardness, said "Unless Colin objects, I'll put Mama and Papa in our room and we will take the sofa and chairs in the parlour here. We had a guest room until Susan arrived, but now she and Harry each have their own rooms, and we sold the double bed we had for guests just in September, more's the pity."

"Audrey, come with me and we'll see what sheets, blankets and pillows are to be found," Mrs. Jepson said.

By eight o'clock, we had worked out arrangements, and in spite of, or perhaps because of, the inconveniences, there was a general spirit of adventure. Mrs. Jepson brought out some supper. We had, perhaps against the current fashion, had a roast of beef for Christmas dinner, with a Yorkshire pudding beside, unlike in the county way that it is presented as an early course with gravy to dull appetites before the roast is served. This day we had roast potatoes, parsnips, turnips, cabbage, carrots, mushrooms, and, of course, gravy. Amelia and I had brought sherry and port, but Maude and James had carried two bottles of claret and two of hock. We were not great drinkers, and only one each of the white and red were consumed. Audrey and Mrs. Jepson were given a place at the table, with Susan and Harry in high chairs, which was eminently sensible as this allowed them to see everyone but did not permit them to run around. In the event, they were quite well behaved, and both got sleepy by around half past three, so Ethel placed them on upholstered chairs and let them nap where we could observe them should they wake. Despite animated conversation, they were asleep until after five o'clock.

Now getting on for nine o'clock, cook and Audrey brought in trays with bread and butter, some sliced beef, a game pie and a pork pie, three types of pickles, and some cheddar cheese. Amelia and I were given the task of ensuring all had something to drink. Generally, the choice was a cup of tea accompanied by a small tot of port, sherry, or whiskey. The pantry had beer and cider, but I think only Colin had a beer.

We had not had pudding with dinner, Ethel deciding it was too much on top of a large meal. Instead, she had found some oranges

and they were presented already peeled and divided. A nice finish to the meal. But now, with supper, cook and Audrey made a grand entrance with a flaming Christmas pudding and a pitcher of brandy sauce.

The wind still howled outside, but we toasted Happy Christmas and were all in a cheerful mood when we retired around ten o'clock. Given the number of people, there was a wait for the WC and bathroom, though being in the house of a plumber, there were two closets, one upstairs and one down, which was most helpful.

"It was a good Christmas, despite the weather," Amelia said as we spooned into each other in the small bed.

"Indeed. One of the best. And given the temperature, I am glad we can generally sleep in confined spaces together."

"I think Ethel was a bit scandalized, but her mother was not," Amelia chuckled.

"Perhaps it is less that she is scandalized than that she did not realize how affection can abide and grow over a long time together. That it is not just the prerogative of the young."

"How wonderfully true, Richard," Amelia sighed as she dropped off to sleep.

* * * * *

We possibly could have found a hansom to bring us home on Boxing Day, but decided that the effort to find one was more than that of simply walking. The rain had essentially stopped and the wind was down. The temperature was around freezing, and we watched carefully for ice underfoot. There was just a little, but given that it was almost water, it was quite transparent and therefore more dangerous. Fortunately, we had no misadventure.

We wondered if the hunt were meeting on the Commons. Oddly we both spoke at the same time after getting home and unpacking our rucksacks. Amelia had started to prepare a cup of tea and some cheese sandwiches while I had cleaned out the stove and was re-lighting it. After I washed my hands and came into the kitchen, then both of us spoke at once

"Do you think the hunt is meeting today?"

We laughed. Fourteen years previously, we had taken a walk together on the Commons, then found some lunch in a public house.

During our conversation, we had both admitted we wanted to continue to enjoy each other's company. Soon after, we decided to marry, but that was the day on which our affection for each other was made transparent. We had both been concerned at the difference in our ages and potential differences in goals. Fortunately, we both had the courage to be forthright. If Amelia has had even a fraction of the happiness from our association that I have, she will be satisfied.

* * * * *

Sadness with celebration



We dined with Michael and Mabel in the Dorset Arms, East Grinstead, on Saturday. This inn had been in operation, though not under the same name, for over three and a half centuries. We toasted the 12 years that Mabel and Michael had been married.

Despite excellent wine and food, the atmosphere was subdued. It was Amelia who grasped the situation. She addressed Mabel.

“Might I venture that the sad news of the Kingstown Lifeboat weighs heavily on you and Michael?”

The Friday newspapers had brought the terrible story that the Kingstown Lifeboat, named *Civil Service Number One*, had put out Christmas Eve into Dublin Bay to try to rescue the souls on the *Palme*, a Finnish barque with some twenty people aboard. This ship had anchored in the supposed shelter of the bay to ride out the storm we experienced too, but dragged its anchors and grounded. Sadly a huge wave capsized the lifeboat as it approached the ship, which tried unsuccessfully to launch one of its own boats to save the intended rescuers. Two other lifeboats and two tugs also attempted rescues, all within sight of shore. All Christmas Day crowds watched and prayed as the *Palme* was being taken apart by the waves. Finally on Boxing Day, the Irish Lights steamer *Tearaght* under Captain McCombie managed to reach the *Palme* and rescue all on board.

Unfortunately fifteen lifeboatmen, all volunteers of course, perished, and at the time of our dinner, just over half the bodies had been found. A truly sad outcome. And Mabel had lost her first husband just six weeks after they were married, when the *Northfleet* of which he was captain was nearly cut in two by the Spanish steamboat *Murillo* which then pulled away in the dark and disappeared. Edward Knowles, Mabel’s husband, charged the Bo’sun John Easter with saving his wife. Edward was later reported to have shot one man in the knee with his pistol for trying to force his way to a boat. 86 souls were saved, but 293 were lost, including the captain. Later, Mabel had married Michael, another sea captain, but now retired from seafaring.

Michael replied to Amelia “Yes. We both have memories that have parallels to the Kingstown Lifeboat story, and, to use a nautical metaphor, it does take the wind from our sails. We know that we have nothing to blame ourselves for in this case, but the knowledge that men have died at sea, and moreover in trying to save others, rather dulls the finish on our shining day.”

“Perhaps that we have acknowledged the tragedy will allow us to give it a perspective,” I said. “We will not have erased the fact that men have lost their lives due to the storm, but we can remember that neither of you could have done anything to prevent that, even

though it saddens you greatly.”

Michael said “Richard, you manage to bring a measure of reason to almost every situation. I am most glad that you and Amelia came tonight to share our Anniversary.”

After this, nothing more was said about the lifeboat catastrophe, and the mood subtly and gradually brightened. The menu offered a spotted dick pudding with custard for dessert, which Michael thought was the best he had ever in his life enjoyed. Indeed, it was replete with raisins and currants, and somehow they must have baked as well as steamed it to give a slight crust. The custard sauce was not overly sweet, and did not dominate the pudding.

I said, “Given our work at the moment, Amelia may be interested to know another name for this pudding is *railway cake*, for which reason I am in total ignorance.”

Mabel said “Are you not making up a big fib, Richard? I have never heard spotted dick called that. Sometimes spotted dog, though that seems to me to insult the Dalmatian breed of animal.”

“No, I’m not telling tall stories. And I agree the name *railway cake* does not seem to be widely used. I think I saw it on a menu of one of the railway hotels and asked what it was. The waiter had to explain that it was spotted dick, but he admitted the cook was from Ireland, where apparently *railway cake* is used.”

“While you are explaining, perhaps the rest of us can share your pudding?” Amelia suggested. There was laughter all around, and we finished our meal and followed it with a round of brandies.

Amelia had consulted her watch several times, and nodded to me discreetly at a particular moment. I looked at my own watch and realized that the time of our train was close enough that we should begin our walk to the station.

“Our train leaves in 25 minutes. Perhaps we should commence our departure,” I said.

There was a minor argument over payment for the dinner, in which Michael allowed me to prevail after a modest protest. While he and Mabel had, as far as I could determine, sufficient funds for a comfortable but not extravagant life, the resources available to Amelia and I were certainly greater. Mabel had been exceedingly kind to Amelia some two decades earlier when she had experienced some great difficulty in life after being violated, then dismissed by the family of the man who attacked her. To me, we still owed Mabel

a debt, and not just gratitude.

The Buckleys insisted on walking us to the station, but we persuaded them to leave us there once we had ascertained that the train was on time. Having said our goodbyes, we had only five minutes before the train chugged into the station.

“That was a most pleasant evening,” I said.

“Yes. Especially once we were able to talk about the lifeboat disaster. It seemed that acknowledging the disaster helped Mabel and Michael to see it as separate from them.”

“It is interesting that they would find such an emotional link to the lifeboat tragedy. I fear the workings of the mind are a great mystery.”

“Richard. While Michael and Mabel had nothing to do with the disaster this week, are you thinking that some of the railway incidents we are trying to inhibit relate to workings of the minds of people?”

“We have already seen in the Thirsk disaster that a man who had worries and lack of sleep can make mistakes, and those mistakes can lead to catastrophe. That is beyond evil intent. I suspect there are many conditions of the mind that could lead to different unwanted actions. But finding measures to limit the occurrence or the damage when it does occur are as yet behind a wall of ignorance.”

“Well, we can but do our best, Richard. Do not insist on answering all the questions, as it will make you unhappy and will drain your energies to effect the improvements that you are able to propose.”

“That is, my dear, exceptionally good advice. Ah. I see we are almost home. Let us ensure our coats are well-fastened against the elements.”

* * * * *

We went to church as usual on Sunday.

The vicar asked particularly for prayers for the victims of the Kingstown Lifeboat disaster, and also said there would be a special collection of funds to aid the families. One of the church wardens would be organizing this. No doubt there will be other initiatives. I do hope, however, that well-meaning and charitable persons will not be duped by villains who pretend that they are collecting for charity, when the destination of funds is their own pockets.

I mentioned this to Amelia as we walked home.

“Oh. After the service I was talking to Mrs. Spratt, whose husband will be taking charge. She mentioned that he is going to keep a record of all donations, and that they will go to the Royal National Lifeboat Institution. Apparently, the Institution already attempts to support widows and orphans of the volunteers, but they are going to establish a sub-account especially for the Kingstown tragedy.”

“That is good news. The RNLI appears to be well-run.”

“Richard. In reading about the incident, I could not but observe that the lifeboat was using sails and oars. The rescue was effected with a steamboat. Surely a lifeboat needs more than oars to counter the wind, waves and current?”

“I would agree with you, my dear. But in a small vessel, tossing on the waves and subject to capsize – some of the lifeboats are designed to right themselves – it would be very difficult and dangerous to have a boiler and firebox. But I do foresee the use of some of the new internal combustion engines. As yet they are still being developed. There would need to be careful attention to keeping their air intake from aspirating water. And also a mechanism for ensuring a regular fuel supply to that same intake system, given the tossing of the fuel in a tank. Moreover, salt water and electricity are a bad combination, so the ignition spark system will need to be carefully protected. However, there have been reports as well as some patents issued to a man named Diesel in Augsburg about using high compression of the air and fuel to exceed the temperature of combustion.”

“Do you mean there is no need to ignite the fuel?”

“That is the idea. Have you not noticed when pumping your bicycle tire that the pump gets hot near the hose that connects it to the tyre?”

“I had not actually noticed that, Richard. However, the next time I am required to add air to the tyres I will observe more closely. I do notice that when I release air from the tyre valve, it feels cold. Is that related?”

“Yes, I believe so. I must brush up my knowledge of thermodynamics.”

We were silent for a minute or so, then I noticed a pole with telephone wires.

“Amelia. What do you think about getting the telephone installed at home and at the High Street? Communication between those two locations alone might justify the installation, but we saw already on Christmas Day that Maude was able to let Ethel know they were on their way.”

“I think it would be very sensible. A lot of businesses are beginning to use it, and it could be very beneficial when there are urgent matters to be addressed.”

“May I put the matter in your capable hands?”

“Certainly, Richard. I assume at home you will want it in the office.”

“That would seem the most sensible place, but we may consider other places. For example, the office would not be convenient, nor possibly audible, to our staff if we are out. On the other hand, we use the office as our personal living space much of the time, and I anticipate a telephone will get used more there than any other location. I have heard that it is possible to have more than one receiver, but I think we can postpone a decision on that until we have more experience.”

* * * * *

On Monday, December 30, Amelia went again to the Library in Tonbridge. She was gone a good part of the day, and it was dark when she came in.

“There you are,” I said. “I was about to send out a search party.”

“I got engrossed in trying to track some of the stories about disasters or malicious damage incidents. You know, Richard, the newspapers are full of the stories for a few days, and include many tantalizing comments or quotations from supposed witnesses, then they move on and it is very rare that we get a complete story unless there is a court proceedings or report on an inquest. It is very difficult to learn even a fraction of what I suspect may be the truth.”

“Perhaps you should write a short précis of your investigations and organize your notes, and we will set it aside for now. As far as I can determine, you have found no particular items that relate to someone attempting to create a disaster deliberately, am I right?”

“That is true. While there have been accidents and disasters on the railways, there have been none as far as I can determine that

were the result of a deliberate set of actions. Where there is a cause to be reported, stupidity and failure of materials or machines seem to be those seen in the newspapers.”

* * * * *

A new year

1896

January 1896 was a quiet but busy month for us. A number of letters arrived with responses to our little questionnaire about accident data. There were a number of comments of a useful nature. For example, one engineer for a company that made fishplates, chairs, nuts, bolts and screws suggested that if the rail strength were not well-matched with that of these ancillary parts, the quoted strength was a misleading fiction. This was, of course, totally correct, and Parks, Gus and I had even mentioned such ideas in passing. However, we would at some point later need to address the matter.

In that the St. Neots derailment had focused our minds on rail strength, we had, almost unconsciously, begun to emphasize data on that topic, and had decided that we would not try to distribute data on all topics of interest, but first prepare something about the strength of a few important materials to try to understand what ideas and content were most valued by the engineering community.

As we were considering some particular responses, I asked, as much to myself as to Amelia, who was with me in our home 'office', "Should tables of rail strength include the strengths of chairs and fasteners, or would those best be a separate table?"

Amelia responded, "Richard, if we go ahead with the preparation of tables, we need to consider how much it will cost to prepare them. Moreover, it is likely they will go out of date and need updating

with either addenda or complete replacements. We already have an agreement with the respondents that those who contribute will have access to the tables, presumably at cost, which might not be trivial, especially given the typesetting and the careful checking that will be needed.”

“Indeed, my dear, we will need to investigate how we may make copies. It is likely the print run will not be very large in each case, but the information will, I believe, be of some considerable interest, especially if it saves each enterprise from having to make their own measurements, or even if it saves them exploring many different offerings of materials that they then must measure.”

“It is a pity there does not seem to be a way to quickly and inexpensively produce a photographic copy of a page,” Amelia said.

“Actually, photography may, in the current instance, be one method we could use, though the resulting paper is rather thick and often shiny.”

* * * * *

At the start of February, Amelia and I went to Swindon to spend a few days with Lawrence and Judith Stone. Lawrence had been my best man when I married Amelia in late February 1882. Their children Andrew and Joan were now in their thirties. Andrew had studied engineering, and was working for J & G Thomson of Clydebank, the shipbuilders. Indeed, I was one of his references. It occurred to me that while he was not in the railway business, the strength of materials tables we were building might nonetheless be of passing interest to him. Moreover, there might be some information available to the shipbuilders that would overlap or complement the content of the tables we could construct.

Joan had studied nursing and had been engaged by the Radcliffe Infirmary in Oxford. There she met a young doctor, Rupert, and they had, after some five years delay while he established a practice in Bristol, married and rapidly produced a daughter, a son and another daughter within the next five years. Joan, being trained as a nurse, was now working with her husband in keeping the records and accounts for his patients, as well as visiting patients where the need was for simple checks and examinations, thereby freeing her husband to undertake more complex cases.

During our time with Lawrence and Judith, neither Andrew nor Joan came to visit, but then Andrew was in Scotland – he had married a local girl and Judith complained she had difficulty understanding the strong accent – and Joan was quite busy in Bristol.

We travelled up on the Thursday February 6 and returned home on the 10th. On the Friday, Amelia, Lawrence and I talked with various staff of the Great Western Railway about our safety project and the material strength tables. There was general interest in our enterprise. We did not, of course, mention anything, even in our private conversations with Lawrence, about malicious acts.

However, even though Amelia and I kept our questions and comments to the risks of material and procedure failures, Lawrence had some ideas to contribute. He did, nonetheless, wait to share these until our private time on the Saturday, when we took a day in Oxford, rising early to take the train.

Given that Joan and Rupert had been in Oxford for several years, Judith and Lawrence were wonderful tour guides. Judith and Amelia took the lead of a walking tour of some of the colleges, at least those that would allow us into their quadrangles and possibly their chapels. Lawrence and I followed obediently, and it was during a perambulation outside Christ Church beside the river Thames, at that point for some peculiar reason termed the Isis, that he asked “Richard. In your work on estimating diverse risks to the railways, have you given any consideration to the possibility that there may be people who might do intentional damage to cause accidents?”

Lawrence had been a friend from the time of our apprenticeship, and he and I knew each other well. If I lied or prevaricated, it would be obvious to him. Thus I replied, in all honesty, “Lawrence. I will admit that such possibilities are within the purview of our study, but also tell you that I am bound by my contract with the NER and GNR to remain silent on the subject. Indeed, I am probably not supposed to admit as much as I have, but knowing me as you do, I believe you would become suspicious of my answer, and that suspicion could damage our friendship.”

“Thank you, Richard, for your candour. I can understand why the subject is sensitive, and we will let it rest there, though if and when you are at liberty to share information, I will be most interested. In the same vein, I am constrained to be silent about some rumours within the GWR, at least for now, and I will trust that my

mention of them will go no further.”

“Of course.” I answered. “And I must thank you for telling me that much. It suggests that we – Amelia is working with me on this – should endeavour to discover as much as we can, and to get the Directors to act in a way that permits some level of discussion so that the railways and government agencies can work to protect the public good.”

“Indeed, I would heartily support your efforts,” Lawrence rejoined.

At this juncture, the ladies were taken with the view of a pair of rowing eights, one seemingly trying to catch the other, with the coxwains yelling encouragement and orders as the men at the oars strained to propel their vehicle across the water. A pair of swans were unfortunately in the path of the boats and one got a whack in the rump by an oar that was moving through the air toward its next stroke in the water. Amelia and Judith were quite upset at this, though the bird did not seem too much the worse for the encounter.

We returned through the town and past the Carfax to the Turl Tavern, where we found lunch. Afterwards, we took a carriage that Lawrence had previously arranged and toured North Oxford, now replete with many fine dwellings. The development of the area has no doubt been accelerated by a number of dons, since 1877 permitted to marry, building rather fine family dwellings. Our driver took us onward to Godstow Abbey ruins, where supposedly Eleanor of Aquitaine had imprisoned the Fair Rosamund who was the mistress of her husband Henry II. We returned to town via an area called Jericho and saw the imposing Walton Street buildings of the Oxford University Press designed by Daniel Robertson and Edward Blore, before dining relatively early at the Randolph Hotel so we could take a convenient train back to Swindon.

On the Sunday, we rose late and, sinners all, decided to eschew church. The day was dry and bright, but overcast. We had a pleasant and invigorating walk around Coate Water Park.

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On Monday, Amelia and I returned home via London, but arranged to meet Kirkaldy for lunch in the Strand not far from Charing Cross so we could discuss our progress on the tables and get his

ideas on their form of presentation.

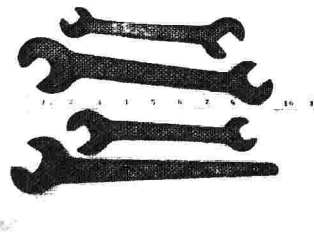
Kirkaldy said “There are many different ways to write down the information, each having some advantages or disadvantages. No doubt you – we, the different engineering and railway companies – will want to change the layout, and also to update the information as more measurements and new materials come along.”

I answered “I’ve been thinking of how we can produce copies of the tables when we have them ready. Typesetting is both expensive and error-prone. I’ve actually wondered if the blueprint process would work, since we could write the tables in India ink on tracing paper, even correct or update them, and produce copies relatively easily, though they would be blue.”

“There’s also photogravure and the Ives’ photoengraving method, but I think they are more work and cost. The blueprint approach would probably be satisfactory for the near future. It also allows the original table written on tracing paper to be used directly without the chance of transcription errors.”

* * * * *

Disguises



A letter from Henry Armstrong awaited our return.

Doncaster
Feb. 4, 1896

Dear Mr. Carr,

This is to bring you up to date on some of my

investigations relative to the safety study. You will, of course, understand that I must be circumspect in how I phrase some of my comments.

I will not include here any notes on the strength of materials tables we have discussed. That work has been passed to Mr. James Hurley, and I have asked him to write to you directly with any data, comments or questions. Though he is quite young and new to our organization, I believe you will find his work to be in all respects satisfactory, and have no qualms in leaving it in his hands.

Now to the main matter of this letter. I have followed up some of the lines of enquiry we considered when you visited. As we thought might be possible, I have overheard conversations where people either of or associated with staff who were hurt or killed in accidents on the railways have been reported to be interested in causing harm to the railway assets with a view to creating a disaster. Oakley had me consult a solicitor as to the possibility that such information might be actionable in some way. Unfortunately, and as we suspected, talk is not action, and while in some cases there may be a case for uttering threats or issuing a slander, it is not likely we would achieve anything worthwhile by pursuing this.

On the other hand, it does appear that there could be cause for concern, and Oakley has suggested that you may wish to make another visit soon to consider what we might do. We have assigned a railway policeman, ostensibly as a track inspector, but more as a pair of

eyes to report suspicious activity. However, such men, if any good to us, are a serious expense.

I await your response, remaining as always,

Yours sincerely,

Henry Armstrong

* * * * *

On Tuesday, February 11, Amelia and I both went to our offices on the High Street. Parks and Gus were both there, and we considered Henry's letter as well as the technical information we had learned in Swindon. I added "Without offering any source, I must add that I heard that the GWR has concerns about malicious acts against their assets."

Parks said, "We got Henry's letter last week, and over the weekend I had some thoughts about a possible course of action."

"I think you had better tell us, Roger."

"I'm afraid it may take rather more words than I would like."

"You are well-aware, of course, that Hilda spent some of her youth in the Workhouse. She was eight and her brother Jack not yet two when her father died and her mother was unable to earn enough to keep a roof over their head. You and ... er ... the first Mrs. Carr...."

"You can say Geraldine," Amelia offered.

"Thank you. Well you and Geraldine hired her and gave her a good life. In fact her earnings were enough that she was able to pass a little money to her mother so she and Jack could leave the Workhouse. Mrs. Brown took in some mending and did other jobs. Later, after Hilda and I married, we were able to pay for Jack to get some better education, and he now works on track maintenance for the GNR."

"That I did not know. What age is he now?"

"I have to think. Thirty-seven or thirty-eight, I believe. He is a now foreman of a gang and does well enough. My mother-in-

law lives with him still, and helps look after a mob of four children ranging from 1 to 14.”

“Is it possible he learns of or hears information relating to the issue we have at the moment?”

“It’s possible, though he is chapel and temperance, so never in the tavern. But I have an idea I would like to test against your judgement if I may.”

“Please,” I said.

“It occurs to me that Henry Armstrong might be persuaded to pretend to hire a new cook. That cook would have to be someone not known in the area. She would be someone well-acquainted with the Workhouse, so could fit in with the family of those persons suspected by the GNR. It might fit that this new cook has an old acquaintance in the new agent Henry mentions, and they could meet in an appropriate tavern to observe and listen.”

“Who do you see as acting as the cook?” Amelia asked.

“Why, Hilda of course. She would love a chance to see her mother and her brother and his family. Truthfully, her current wardrobe is too ... er ... respectable. But we should be able to find some suitable clothes.”

I responded “It has some promise. Would Hilda be amenable to this assignment. It has some potential dangers.”

“We can but ask,” Parks said. “However, I believe that it would appeal to her as both being out of the usual and also letting her visit her family. The purported connection could be that she knew them in the Tonbridge Workhouse, and not raise too many questions.”

I asked, as much to myself as my companions, “How will we arrange this with Henry Armstrong? I would not wish to put the ideas in writing, as there is then too much risk of the matter becoming known outside our small circle.”

“Would it be possible for you to visit Doncaster in the course of pursuing other lines of enquiry and set up the arrangements with Henry? You could telegraph on the day of your arrival and Hilda could arrive a day or so after. I would imagine we could propose that Hilda would ostensibly be given a fortnight or a month trial as cook, after which she would find she was not comfortable in Doncaster and could return here.”

“That should work. I suppose we could also try the telephone. The trunk lines have been available for five years. I have been

wondering if we should consider subscribing here in the business. Frankly, I do not know if there is a telephone in Henry's office or nearby."

Gus said "There is often talk that the operators listen in, so it may be unwise to trust to the confidentiality of that form of communication. And we would probably want to pre-arrange a form of words to indicate that Mrs. Parks should go to Doncaster."

"A good point, Gus," Parks responded. "But first I had better ensure my wife is willing to be a party to this plan."

* * * * *

Hilda was, in fact, rather excited to undertake the task.

I replied to Henry Armstrong's letter without specific mention of any plan and arranged to arrive in Doncaster on Tuesday, February 18. I got there mid-afternoon, and on meeting Henry, asked if we could speak somewhere private.

"Let us take a walk to one of the engine sheds and we can discuss matters of how the engines might contribute to derailments and so forth. There is enough noise in the yards that if we talk while we walk there, nobody will overhear."

We set off immediately, and I apprised Henry of our plan. He was quite enthusiastic, but I pointed out that his wife Anna would have to be aware at least that Hilda was not quite as she would appear.

"Indeed, you are correct. When we get back to my office I will have someone carry a message to her that I will bring you home for a cup of tea at 5 o'clock. If all is agreed, you can telegraph to Parks and we will go ahead as soon as possible. I will also ask that George Nesbitt, the new man we have 'hired' for track inspection, get in touch with me as soon as possible, to say where he will be tomorrow, ostensibly so you can talk with him."

"Yes, that will be fine."

"Perhaps you will stay for dinner tonight?"

"I fear that would be an imposition at such short notice, though the invitation is appealing. No. I want to spend some time thinking, and even though the trains are now very much more comfortable than in the past, I still find the journey is quite tiring."

"You are at the Magdalen again?"

"Yes, it suits me well."

* * * * *

Anna was quite willing to play employer to Hilda, who would, as is the custom, be called Mrs. Brown, her relationship to Roger and through him to our consultancy unmentioned. Nesbitt had been sent a message to contact either Henry at his home or me at the hotel after half-past six, whichever was more convenient to him.

I had arrived at the hotel at a quarter-past six and had but a few minutes to unpack my valise when there was a knock and one of the hotel servants delivered a note that there was a Mr. Nesbitt waiting in the foyer, so I hastened down, but realized that I needed to telegraph home and also that walking to the station would avoid being overheard at the hotel.

“Mr. Nesbitt, I am Richard Carr.”

“Good afternoon to you, sir. I got Mr. Armstrong’s note, and it seemed urgent.”

“It is not an emergency, but there is a matter that will benefit from prompt attention. In fact, I must send a telegram that is fairly urgent, so perhaps you can walk with me toward the station as far as needed for me to communicate our business.”

“Certainly, Mr. Carr. That is, in fact, in the direction of my lodgings.”

Once we were in the street and I was sure nobody was following us, I told Nesbitt what we planned, and he was agreeable to meeting Hilda as if they were old acquaintances. I had already got the address of his lodgings, and Henry and Anna would pass these to Hilda so they could arrange suitable meetings. For Hilda’s security, Nesbitt would collect her from the Armstrongs’ house and return her there. I told him – truthfully – that Hilda had grown up in the Workhouse and that we hoped to allow some of the friends and family of the unfortunate Petch to learn of this as a possible entry into their confidence. Also that Hilda’s brother was with the railway.

“I’ve met Jack Brown. Good worker, and his men trust him for his honest ways, but he’d stand out like a Salvation Army band if we took him to a public house.”

“Yes. I gather he follows the temperance flag. Given how drink affects many people, I can understand the sentiments of those who feel it should be banned, but favour moderation myself. Anyway, I will say goodnight to you now that we have agreed how we will proceed.”

Nesbitt asked “Does the Railway fear the Petch’s will try to wreck a train?”

“It is more that we do not know their intent. Perhaps they simply want to express their anger and frustration. Nevertheless, others may exploit those feelings. If they only damage Railway property, it would perhaps be a nuisance. But they could cause injury and death to those wholly unrelated to their cause.”

“Yes, yes. There is potential for much mischief.”

“I will also say that my consultancy takes the view that our role is to explain and report. If we make recommendations, it will be to offer the most effective and efficient remedies to the risks. That could be to find ways to make life a little easier for those who have been victims of accidents.”

“I’m glad to hear that, Mr. Carr. So far I’ve not heard of anything that threatens the Railway, though Mr. Armstrong told me about the fishplate bolts, but among the men I hear odd grumbles – nothing very definite – that people like the Petch family could have been treated better.”

“Our task is to try to find ways to remove sources of such grumbles.”

“That makes sense.

“If I may make a suggestion, sir, would it be possible for Mrs. Brown to use the laundry services of the Petch’s? It might be a more sure way for contact to be made.”

“Indeed. A capital idea, Mr. Nesbitt. But I suggest we also use the occasion of your sharing a glass with Mrs. Brown as a way to establish a pretext for messages or other communications to be made between you that avoid communication with Railway staff or consultants like myself.”

“Yes. That makes sense, Mr. Carr. And we may get wind of something that way too.”

“Perhaps you can make an excuse tomorrow morning to leave the location of the Petch laundry with Mr. Armstrong. And then I think unless there is anything else, I will say goodnight to you, Mr. Nesbitt.”

“Goodnight sir.”

We were at that moment but a few yards from the station. Telegrams usually went from the Post Office, but the railways had use of the system. Also, I was not sure if the Post Office would be open

at that hour. In any event, I identified myself to the station agent – I had a letter from Oakley for this purpose – and sent the message

EXPECT EXTRA DAYS NEEDED.

MAKE DECISION NEW COOK

This was our agreed signal that Hilda was to come as soon as possible.

* * * * *

Hilda arrived late the next day – Wednesday Feb 19. I would have to wait to learn details of her reception at the Armstrongs' house and how they worked out that part of the piece of theatre we were constructing. We felt it was best if I were not seen to meet with her, in case our ruse was tumbled. However, I had managed to pass Nesbitt's suggestion of using the Petch family laundry services on to Henry, who was somewhat perplexed by the note from Nesbitt with the address for the Petch family until I arrived and was able to illuminate him as to our modified plan.

I learned later that the Armstrongs had to search their wardrobes and drawers to find suitable items to be laundered, but in the morning of Thursday Feb 20, Hilda took a hansom with some pillowcases filled with the items they chose to the Petch address. She told the cab driver to wait while she arranged that what she had brought with her would be laundered.

Going down a small alleyway, Hilda came to a small courtyard that was filled with tubs, a couple of tables, and a pair of mangles. Several children, probably aged between 6 and 13 were working. A woman came out with a heavy basket of wet linen. Seeing Hilda she said

“You want something?”

“I've just been hired as cook and housekeeper at a house nearby and want to get the linen all washed so I'd be off to a good start.”

“Have you got it with you or must we collect?”

“I took a hansom. It's at the end of the alleyway.”

“Oooh. Nice for you. Mostly have to send the pony and cart with my sister's ... Andy.”

“It was madam's idea. I grew up in the Workhouse. Never want to go back, either. Got a letter from a family member who works on the Railway that there was this job going.”

“Me ’usband used to work on t’railway. Got killed in Thirsk crash, and now we do washing to keep out the Workhouse.”

“Well, I’ve some business for you in aid of that cause.”

“I’d better get your particulars. Andy! Andy! Go fetch the stuff – didn’t get your name.”

“Mrs. Brown. Hilda.”

“Ethel Petch. I’d better get the address.”

“I wrote it down for you.”

“Can I ask how you heard of me?”

“I think my family member had heard about your difficulties after Thirsk.”

“Well, we can use the money. I’ll get Andy to get your stuff. Andy! Andy!”

Hilda saw a young man come out of the building. Ethel told him to get the linens from the cab out front. When Andy returned, the items were taken out and noted, and a price quoted.

“For collection here?” Hilda asked.

“Delivery sixpence extra.”

“Delivered please, and if you tell me when they’ll arrive, I’ll make sure payment is on delivery so you don’t have to wait for settlement.”

“’ppreciate that, Mrs. Brown – Hilda. If the weather cooperates, they’ll be ready middle of the day Saturday.”

* * * * *

Covert observations



Nesbitt collected Hilda from the Armstrong house at 8 o'clock on Friday evening.

"Where are we going, Mr. Nesbitt?"

"There's a modest tavern that is generally friendly not far away, Mrs. Brown. I'll assume we'll play the role of old friends, for example, who met in Tonbridge singing in a church choir. Would that work?"

"Yes. I think that should be fine. It would have been two decades ago."

"Over a glass, we can exchange real information that fits the story in case we need to flesh it out. And we need to be observant as to what might be going on in the pub, though I suspect our meetings will mostly serve to communicate information back and forth."

Hilda had a half of stout, while Nesbitt a pint of ale and bitter. They sat on a bench at one end of the bar-room with a small table on which they could rest their glasses.

For some minutes they quietly consolidated what they would tell the world. Moreover, though Hilda had already communicated through Henry Armstrong her success with the laundry, Nesbitt was pleased to learn of it. When I was informed via a letter from Henry written from his home on the Saturday evening, I was also interested

to learn that she had encountered Andy Heap.

What I only learned later is that as they were finishing their drinks and preparing to leave, two men had come in and sat at the other end of the room. Nesbitt said "Ah. That's a character to watch."

"Which?" Hilda asked quietly.

"One on the left is Oliver Mott. Seems to be mixed up in a lot of things that aren't quite proper, but he's managed to keep clear of the magistrates. I don't know the man on the right."

"He's wearing someone else's coat. It's a little too big and I think deliberately shabby. His trousers and shoes give him away. And the large signet ring. We're too far away to see it clearly."

Nesbitt drained his glass and took it and Hilda's which was already empty to the bar, then came back and helped Hilda into her coat. Once they were outside, he said,

"The ring has a large, stylized W on it. I suppose it's none of our business, but when Oliver Mott is involved, it may be worth keeping in mind."

I knew nothing of this extra information until some time later, unfortunately. Indeed, that very Friday morning I had seen the man with the ring, and could identify him.

* * * * *

I had kept my room in Doncaster for the rest of the week until Friday, when I had returned home.

On Wednesday, I spent some time with Henry Ivatt, who pumped me for ideas on reducing the axle loadings of the Stirling Singles. Colonel Marindin had communicated that he believed that a fracture of the rail was responsible for the St Neots crash, and that too high an axle loading on the Stirling 8-foot Single locomotive was thought to be contributory. Ivatt felt that the Colonel's arguments would be difficult to refute, and that it was likely they were, if not precisely correct, sufficiently convincing that measures would have to be taken to reduce the axle loadings.

"I shall have to design some new locomotives, but we cannot afford to simply scrap the existing ones, so will have to do some modifications to reduce the weight above the driving wheels. Also a new design will have to be discussed by at least some of the directors,

if not the Board, before resources are committed. However, my own view is also that the track is really not up to handling the Stirlings. I walked it all the way from King's Cross to Doncaster – 156 miles.”

“My word. That shows dedication to detail, but I'm sure it will help to reduce dangers in the future.”

“Unfortunately, we don't have anything we can use today. Worsdell and Holden's J15 has a wonderfully low axle loading, but it isn't going to be fast enough or heavy enough for the express lines. Still, we'll build more of those for the goods work and trains not needing speed. The 0-6-0 arrangement wouldn't be good at speed anyway, lacking bogies to steer the corners.”

“When I was looking at the track near Doncaster in November, one of the track men said old rails are sometimes reused. Is that correct?”

“It's what I've heard too, and it is consistent with what I saw when I walked the line. There appeared to be some rails that were more worn than others. It is a policy intended to be parsimonious, and I can support it for building sidings or track that will be used for low-speed traffic.”

“I take it your concern is the possibility of fatigue of the metals?”

“Yes. It is still a topic of much discussion and research as yet, but I feel that we should use only the best materials and workmanship for high speed and heavy load lines. At low speed, particularly in locations where a derailment would not occasion great disaster, we can afford to risk rails breaking, but not on embankments, high speed curves, bridges or tunnels.”

The rest of the day dealt with details, since Ivatt wanted the simplest and cheapest modification of the Stirlings that would achieve a suitable axle loading reduction for the big 8-foot drivers. That meant judicious lengthening of the frames and moving what heavy items that were movable so they were over the bogies. However, each change would add potential complexity. One step forward, two steps back. All complicated by the need for haste, which the later Little Bytham crash showed was warranted. Unfortunately, at this date in the middle of February the directors were not in a hurry.

Though only tangentially related to my safety review, I was interested in how Ivatt would rebuild the 8-foot Singles. On this day, he was at the stage of considering ideas, with no concrete plan in mind. However, it seemed that his ideas for larger wheels on the

rear bogies along with stretching the firebox and frame would be helpful to spread the load.

I spent much of my Thursday in Sheffield, where I had arranged to meet some of the metallurgists and engineers from the steel industry. Because there were several companies, and iron and steel are very dirty industries, we met in a room I had arranged at a local hotel. The expense of the room and a decent lunch were helpful in ensuring the four people I wanted to meet attended. There was interest in the material strength data initiative. The steel men thought that they might be able to both contribute to and learn from the tables. Moreover, once we agreed that the tables would include only standard products, the stress of avoiding the release of sensitive information about new ideas was released. That, and a supply of beer, kept the atmosphere congenial.

At breakfast on the Friday, I noticed Jeremiah Wardle at a nearby table. He was a Member of Parliament from a northern constituency and he was on the Board of the NER. A lot of MPs had boardroom appointments. Sir Joseph Pease was himself a long standing MP. It was, I felt, rather unseemly that so many of the votes on railway issues were made by men who were receiving monies from and had decision-making roles in the companies about which they were voting in the divisions, even though there was no illegality in their having such dual employ. A part of the reason, no doubt, was that most railway lines needed compulsory purchase power to establish their right of way.

I had never been introduced to Wardle, but he had been pointed out to me a few years before at a reception that was held when a new branch line was opened. We had done some work on the bridge calculations for the line. I would likely not have gone to the reception but it was convenient when I was en route to another assignment. I rather doubt he knew me, and he gave no indication of recognition, so I did not attempt a greeting.

Indeed, I was anxious to spend a short time with Henry Armstrong to catch up on information about Hilda before I returned to Tunbridge Wells. Thus I finished my breakfast in a timely fashion and did not dally in conversation with anyone.

* * * * *

Personal moments



Though we were busy with the safety review and had added the task of preparing material strength tables, Amelia and I had booked a night in the Grand Hotel in Brighton on Tuesday, February 25, to celebrate our 14th wedding anniversary.

We would arrive in Brighton around three o'clock on the Tuesday and come home about same time on the Wednesday. I managed to arrange that we had the same suite as in 1882. Indeed, we took the same train from the West Station, but we eschewed the hansom from the station to the Grand Hotel and simply walked.

We were welcomed at the hotel and shown to our suite.

Before I could even hang up my coat, Amelia asked "Bath?"

"What a splendid idea! Shall I run the water?"

"Please. And I doubt we need to undress each other this time."

"Are you in a hurry?" I asked.

"Actually yes, but to warm up in the hot water. It was cool outside."

We both undressed, and following our usual practice, we carefully folded our clothes and put them on chairs. Amelia and I have always been neat and tidy, even before our marriage. Habits live with us, live within us, and to a large extent make us what we are. I was tempted to laugh about the absurdity of two people married for more than a decade and about to indulge in a romantic, erotic time together who were so carefully attending to the care of their clothing. I decided laughter would not lend itself to the mood required of the

occasion, and followed my now-naked wife into the bathroom.

Amelia stepped carefully into the bath.

“Should I sit behind you or take the taps?” I asked.

“I think behind me will be most comfortable.”

I got in and Amelia leaned back against me.

I said “It is a pity I had to go to Doncaster this past week, as there were two separate demonstrations on the 20th of moving pictures.”

“Really? What does that mean?”

“Several inventors are experimenting with methods to present photographs that have motion, so you can see a dancer actually dance. The idea is to have many images and present them very quickly one after the other and the eye sees them as a continuous movement. There are some parlour tricks where one puts a sequence of drawings as in a book then flips the pages.”

“I think I remember something like that some time ago.”

“In any event, on Thursday the Lumiere Brothers, who have set up some exhibits of their ‘films’ as they are translated into English, since the images are put onto a long strip of photographic material, projected some of their films at the Empire Theatre of Varieties in Leicester Square. And the same day Robert W. Paul demonstrated his image projector that he calls the Theatrograph at the Alhambra Theatre.”

“You say project.”

“Yes, it is like a magic lantern, but instead of one image, one gets a whole sequence at some number per second, I think at least 10 per second.”

“So do they have to have the subjects stand very still, then move very slightly for the next photograph?”

“No. The inventors have been building cameras that take the pictures at the same, or nearly the same, rate as they will be projected. It must be devilishly intricate to get the film to move, stop, be exposed, and repeat. Unless, of course, some clever optics manage to align the image on the film for each exposure.”

“I am sorry, Richard, that you missed the opportunity.”

“There will almost certainly be more. The Lumieres have been setting up as a commercial enterprise.”

At this point, without thinking, I caressed one of Amelia’s breasts, and she sighed slightly, so I put my other hand on the other. Then – I had removed my spectacles – I realized she had trimmed nearly

all of the hair from between her legs.

“You have been busy with the scissors,” I commented.

“And the mirror. It took some time, but I thought it might be worth the effort.”

“I’m sure it will be. Are you not apprehensive my tongue will be mischievous.”

“Perhaps it will be. And you should be able to find my joy button more easily.”

“Is that what you call it?”

“It is how I think of it.”

“Are you impatient for me to try?”

“I think a few more minutes like this, then we can see what pleasure we can share.”

Our dinner was quite late. I could pretend that we were assiduous for some hours in pursuing physical enjoyment of each other, and while we had much pleasure over the space of perhaps half to three-quarters of an hour, we then fell asleep in each other’s arms. Waking, we tidied ourselves, dressed and went down to the hotel restaurant, not feeling like venturing out into the dark and cold.

* * * * *

It had been agreed that Hilda would spend four weeks in the role of Mrs. Brown. We felt that unless there were discoveries or developments that made her continued performance critical, we would then abandon that particular line of enquiry. As it happened, other events intervened, and they were outside of our involvement.

At this time, things were surprisingly uneventful for us in Tunbridge Wells. We were kept quite busy with data arriving by post for the tables of material strength. Our forms seemed to elicit a lot of useful information, some of it a deal apart from the direct interest of the material strength but nevertheless of ongoing relevance to railway safety. An example was the inclusion of a question from one of our correspondents as to whether the wet heat of high-pressure water or steam was especially corrosive to pipes. That was clearly something to be investigated, though it would not be part of our current project.

In Doncaster, from letters received from Henry and Hilda, we learned that Hilda had established a level of conversation with Ethel

Petch, and she had been invited in for a cup of tea. Roger Parks brought in the letter to the High Street office and read some parts of it out loud, though he was reluctant to put the letter in our hands. I could appreciate that a wife might express some sentiments that were not for our eyes or ears.

Roger read “This Thursday (that would be February 27) I chose to deliver the laundry so I would have an excuse to talk with Ethel Petch. She invited me in for a cup of tea and I met Mary Heap, her sister-in-law. They wanted to know how I’d managed to get out of the Workhouse. I said I thought that it was likely the Tonbridge one was less unpleasant than many others, but that a kind family had given me a chance when I was 15. In that respect, the truth was easy to relate. It seems that they are worried that even a slight diminution in their income will mean one or more of the family will be forced into the local Workhouse.

I know Mr. Carr had suspicions that Andy Heap is a young woman. I feel the same, but will consider ‘him’ as he presents.

One thing that I did notice when I took the laundry. As I was paying the hansom cab and gathering the sacks of laundry to be washed, I saw a man named Oliver Mott come out of the alleyway. There are other doors off the alleyway, but I rather think he had been to the Petch’s. Mr. Nesbitt said Mott is, he believes, involved in unsavoury business in Doncaster. When we had our drink together, Nesbitt pointed out Mott. He was with a man who had clearly put on a shabby coat, but whose trousers and shoes implied he was well off. Mr. Nesbitt used the excuse of returning our empty glasses to note that the man was wearing a large signet ring with a W engraved on it. Whether this will be important or not”

“Wardle!” I exclaimed.

“Should I know the name?” Roger asked. Gus just looked puzzled and Amelia was out on some errand or other I do not recall.

I explained who Jeremiah Wardle was to my two colleagues.

Roger said “It is possible that all this is inconsequential, but my bones say it is not.”

Gus chimed in “Suppose someone wanted to cause the stock price of the GNR to fall. An accident – whether accidental or caused – would have that effect. Or even an incident of no severity, like the report that some fishplates have come undone.

If I wanted to do that, I could do it myself, or hire someone.

However, someone who had reason to feel aggrieved with the railway would no doubt act for less money, especially if in straitened circumstances. And if Wardle is the instigator, he would want to avoid being seen anywhere close to the scene of any mischief so would engage an intermediary of the sort Mr. Nesbitt has identified.”

I said “We may be stretching our imaginations much further than the facts will support, but I think we need to inform Henry Armstrong of what we know and ask him to let Hilda and Nesbitt know our conjecture. I will write immediately to Henry at his home, but will use a double envelope in case one of the servants is nosey.

I will also write to Sir Joseph Pease, since Wardle is on his Board. But I had better ask him how I can communicate securely with him before I broach the actual material.”

Roger added “I will also write to Hilda, and thank her for her news about renewed acquaintance with Nesbitt and how interested I was to read about the two others she encountered by chance. I won’t mention names, but will say how curious it is that one of them is known to you through our railway work, and that probably her employer does too.”

It was still only mid-morning. We posted our letters by noon, so it could be possible they would arrive the next day, which was March 3.

* * * * *

That Saturday, March 7, Amelia and I attended an amateur concert in the evening. The musicians were surprisingly good, though there were, not unexpectedly, a few sour notes. On our walk home, I asked “Are you satisfied in what you are doing with the material strength data? I worry it may bore you.”

“I will agree, Richard, that there is tedium, but I now see something of a finished product. Of course, it will never be truly finished, but I mean that it will soon be in a state that we can distribute a version of it.”

“Do you think the blueprint method will work for the reproduction of the material?”

“For our first effort, certainly. I believe we need to find out how the engineers receive the tables, whether they find them useful.

It would be wasteful to spend money to have tables typeset then discover they are less than helpful.”

“I cannot agree more.”

“Richard, do you think that my suggestion that we report data for a single type of material or rail as a chart where we divide the range of values into equi-spaced classes then put an X for each data value in the appropriate class. That will show the pattern of values that have been reported. It surprised me how much variation we see for supposedly the same material.”

“You told me you had seen such a chart before, and I am embarrassed that I do not remember the reference.”

“Oh, I first saw something like that when I was studying to become a nurse. Florence Nightingale was very adept at producing charts. I think her Rose Diagram might work very well to highlight different risks in our safety review, but that is really for another day. The recording of a set of observations as I have suggested Miss Nightingale titled ‘Lines’, which I think is misleading. And I believe that it was a William Playfair who first – or at least is reported to be first – used the idea in the late 1700s.”

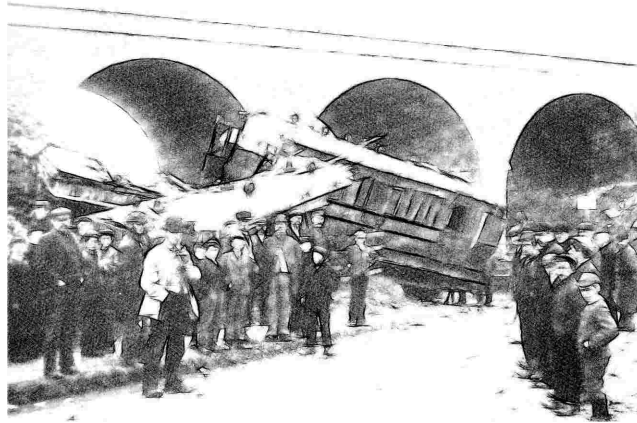
“What a fount of useful ideas you are, Amelia. With other delights as well, of course.”

Amelia laughed “Of course. But I think the delights in your mind require the collaboration of two willing participants.”

Now it was my turn to chuckle. I noticed that my response to Amelia’s witticism was loud enough that a woman walking with a male companion and a dog on the other side of the street turned to glare at me. In a soft voice, Amelia said “She looks like she would not comprehend my wit,” and I had to muffle my mirth.

* * * * *

Another crash



We had just stepped outside on our way to church the next morning when a telegram boy cycled up to deliver a message. I took the envelope and passed a thru'pence to the boy and opened the telegram.

DERAILMENT LITTLE BYTHAM SATURDAY EVENING STOP
PLEASE COME STOP OAKLEY

There would be no church today. We re-entered the house and informed Betty that I would be leaving as soon as possible, and I raced upstairs to pack a valise that would suffice for several days. Amelia came to our bedroom and opened the strongbox and withdrew some money.

“Thirty-five pounds? Is that about right?”

“Yes. If I need more, I can make some arrangement with Oakley.”

“There are ten sovereigns and five five-pound notes” Amelia said.

“There should be more in the box for the household operations,” I replied. “And I have about ten pounds and some change already.”

“Yes. Plenty still there to keep us going here. I will lock it again.”

“I have the telegram from Oakley in my document case. I may need that to get to the site if the line is blocked.”

“Let me say some things that you might have forgotten, and you can nod if you have remembered them:

- razor?
- brush and comb?
- toothbrush and powder?

- underwear?
- socks?
- pen, pencils and notebook?
- something to eat? ”

“Oh. I should make sure I have something with me. It is, after all, Sunday and many establishments will be closed.”

Just then Betty appeared with a paper sack and a lemonade bottle and said “Some sandwiches, biscuits and a pair of the last apples we put away in the Autumn. They are a bit wrinkled but I believe edible.”

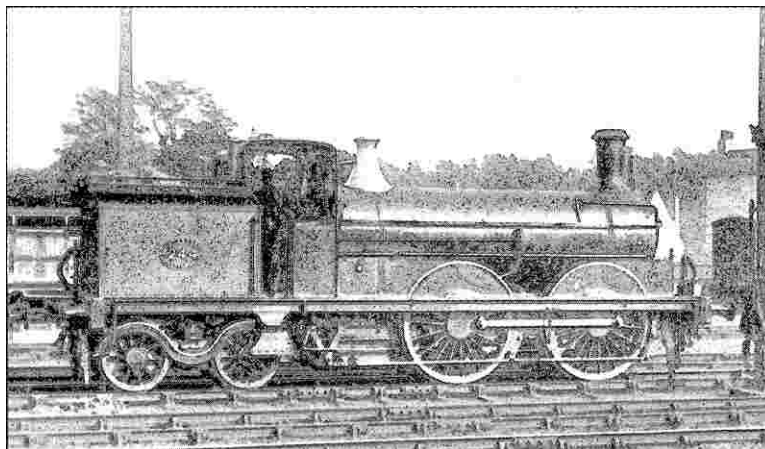
“Thank you Betty.”

“You can thank Cook for that. I was going to get a neighbour’s boy to run for a hansom, but I realized you will go to the Central Station and it is only 300 yards.”

“Yes, I would have wanted the hansom for the West Station, but will now be away.”

I kissed Amelia and set off right away through the Calverley Gardens, which provided a shorter route to the Station. I got there just as a train was ready to leave and called to the guard that I would pay for my ticket on the train and he waved me to board.

* * * * *



It was getting towards half-past twelve when I got to King’s Cross. There were chalkboards announcing delays on the line due to a derailment. I went to the nearest platform and showed the agent the telegram and asked

“Where will I find someone who can assist me to get to the wreck site? As you see, Mr. Oakley has requested my presence. I also have a letter in my case requesting Railway staff to assist my work if that is needed.”

“There’s a Special being brought ready on Platform 5, Sir. I think you should go there and show your documents. If Mr. Oakley wants you there, I’m sure they’ll let you on.”

At Platform 5, I had no problems. A couple of the railway staff recognized me, even if I did not know them, from when I went to St Neots with Colonel Marindin.

The Special was a strange-looking train. There was a 0-4-4 G2 tank locomotive followed by two flat waggons with rails and sleepers, a box freight waggon with, I suspected, tools and fastenings, then two brake vans. These last were actually what we would use for the human cargo.

The G2 was a decent but not very fast locomotive, but the driver kept us moving at a good clip, probably just under 40 miles per hour. Even if the engine could have been pushed faster, the lack of front bogies might have added another derailment.

The wreck was just north of Little Bytham, where we arrived late in the afternoon as the light was fading. The derailment had occurred a little after half-past seven on the Saturday night. The Leeds to King’s Cross dining car express had left Grantham at 7:17 and was going about 60 miles per hour when the derailment occurred. The three last carriages left the rails. One of them struck the parapet of the bridge the train was using to cross the road at this point. That carriage was destroyed, killing two of the passengers inside. The impact separated the guard’s van which also had three passenger compartments. This ended up on the road below but luckily nobody was killed. The two lady passengers did, however, suffer cuts and bruises and were severely shocked. Ten passengers in other carriages also sustained minor injuries.

On the credit side, medical help was brought quickly by special train from nearby Grantham. Less happily, it was by then raining hard and very dark.

On the way to Little Bytham, I was able to talk with a works foreman – I must check my notebook to verify his name which I was present enough to write down – and he said that the line had recently been re-laid, and that a 30 miles per hour limit had only

been lifted at 4 o'clock on the Saturday afternoon. My heart sank appreciably as I heard this.

Our Special was able to pull into Little Bytham station, and the wreck was strewn a bit further up the line. Before we left the station, I found a railway agent and put my valise in the stationmaster's office. Really, at this small halt, it was not much more than a closet. There were people about, and I feared that the site was not secure against looters. Even those who took what they supposed to be a bit of rubbish might remove evidence that would help us to understand what had happened.

Fortunately, it appeared that there were some GNR people keeping the hoi polloi at a distance from the wreck and the rails. I spied Oakley at a distance of several hundred yards and by showing my telegram was allowed through to speak to him.

"Ah. Carr. There you are. It seems I've been waiting a long time, but I suspect you actually got here as quickly as is possible."

"I believe so, Sir Henry. Do we know what happened? I mean, the cause?"

"There aren't any rails broken, but some are mangled. There'll no doubt be a hew and cry about the re-laying of the line, and that is likely a part of the matter, but I'm starting to see why Colonel Marindin is concerned about axle loadings. I'll not be surprised if the 8-footer didn't shift the ballast on us."

"Last week I talked with Ivatt about how he's rebuilding those locomotives."

"But, naturally, there will be too long a delay before they are ready."

"Have you managed to get any measurements taken?" I asked.

"Some. Keeping the crowd at bay has been a nuisance. But there was a photographer here. I think he was aiming to get pictures for the illustrated magazines and make his fortune that way. However, I asked if he would accept payment to photograph the line in detail from before the crash to the end of the wreckage. He moaned that he didn't have enough plates with him, so I offered him double his usual rate per picture and that someone would fetch plates if he would write a note, and we should, all being well, have a decent record to study. I just hope he didn't mostly focus on lady's hats."

"What would you like me to do?"

"If you have any questions that you think pertinent, I'll expect

you to try to get them answered. Show the letter Pease gave you as needed. And I saw you had my telegram in your hand earlier. That too. Then proceed to Doncaster in the morning and see if you can help Ivatt move forward with reducing axle loading.

I've arranged some rooms at a couple of places in Grantham for tonight. Nothing fancy, but I understand they're clean and respectable. And I requested that there be some food available at all hours. One of our station agents in Grantham will be in the Stationmaster's office all night. He's told he can sleep there, but people might knock him up to find out where they're to find a bed. Trains are stopping at a halt a bit up the line and we've set up some horse carriages to bring them to Little Bytham, where trains to King's Cross will get them onward. Similarly in the other direction. Just get on whatever train you can to Grantham. Now I'll leave you to your own devices and see what else needs my attention, and I will talk to you again either at breakfast in Grantham or else when we are in Doncaster."

* * * * *

I spent about an hour and a half at the crash, making notes as I did so. It was clear that the new track had shifted in the ballast. Or rather that a heavy set of wheels had squeezed the ballast away. Possibly it hadn't been tamped properly, or else the stones were too smooth, wrongly shaped, too big, too small, too bloody wrong for holding railway ties in the right place. Darkness finally forced me to fetch my valise and struggle up the right of way to the halt, which was a good mile and a half up the line. A train arrived quite quickly, but had to wait for the horse carriages to bring up passengers going north. It was almost half-past eight when I knocked on the stationmaster's office in Grantham. The agent was awake and had been prepared.

"Mr. Carr. Yes, here you are on the list. I've got you across the road and down a bit at number 23 at Mrs. Hanley's guest house. She may still have some hot food if you hurry."

Hurry I did, and there was stew steaming on the back of the stove in the large kitchen that clearly served as the main common space. Mrs. Hanley showed me to a small room and indicated the WC to me. I said I'd come right down to eat something if I might.

“Shall we say ten minutes, sir. Give you time to freshen up and me time to lay a place at table. Will you like a glass of beer?”

“When did you grow angel’s wings, Mrs. Hanley,” I joked, noting the compliment was appreciated.

* * * * *

I didn’t see Oakley at breakfast, and on enquiry found he had not slept at the Hanley Guest House. I had retired right after eating the previous night, and surprised myself by sleeping very well. The breakfast was exceptionally good, with bacon, egg, sausage and fried mushrooms with plenty of toast, jam and marmalade. A surprise was the offer of coffee if I wished, an offer I accepted.

“My late husband spent time on the continent and grew to favour coffee in the morning. And now I do too, but not so many English are partial to coffee then.”

“I spent some years in Canada and there coffee was often favoured,” I replied.

“Yes, we English seem to like our tea best.”

After I finished this excellent breakfast, I quickly made my way to the train station where I sent Sir Joseph Pease a telegram asking if I could meet briefly with him later in the week, with reply via Henry Armstrong. Then I boarded the next train to Doncaster.

* * * * *

I was in Doncaster well before noon and found Henry Armstrong in his office. He shut the door and in a low voice asked “Is there a chance Little Bytham was a case of deliberate action to derail the train?”

Keeping my voice low also, I answered “I saw nothing obvious. More that a heavy axle has moved the ballast and/or bent the rails.”

“In a sense that’s a relief, but it will force us to hurry the rebuilds of the Stirling Singles.”

“Yes. That is going to be a priority, even if not directly the cause of the wreck.

“How is Hilda progressing?”

“I relayed the information you sent to her and Hilda shared what her husband had sent to her, but the latter took a day or so to

get to her as they are using her brother's address in case anyone watches our post. However, it does appear that Jeremiah Wardle has been here in Doncaster for some reason and that Oliver Mott is communicating with him and likely with the Petch family. Hilda feels that the Petch's mostly are unhappy that they have been left in poverty through actions that can be laid at the feet of the Railway, for which there is much common support."

"I also feel the GNR has not treated them as well as it should," I said.

"In a low voice I will agree with you," Henry added. "However, it would be bad for almost everyone if they caused any injury or damage."

"I wonder if it may be the best course to be frank with Mrs. Petch, or perhaps with Andy Heap, and tell them our suspicions with the accompanying message that we will recommend to the GNR that more favourable recompense be provided, especially if we can get to the bottom of the fishplate matter and whatever Mott and Wardle are up to."

Henry said "There are risks to that, but likely the Petch family will realize that they either cooperate with us or are under suspicion, so I am in agreement."

"Before we proceed, I'll talk with Oakley to sound out his reaction. He wanted to speak to me today sometime.

"Now, let us go and find Ivatt and see if there is any way I can assist in reducing the axle loadings without enormous expense. Oh. I haven't a room booked for tonight yet. Can we send a messenger to the Magdalen?"

"Yes. Of course. And will you dine with us tonight. I'll let Anna know. Oh. I suppose that to follow our plan, I should let Mrs. Brown know."

* * * * *

Oakley was with Ivatt when we arrived in the office of the latter.

"Oh good. That you are hear saves me from having to find you, Mr. Carr."

"Indeed Sir Henry, the same sentiment applies to me, as Mr. Armstrong and I have a possibly delicate matter to discuss. I have no objection to Mr. Ivatt being privy to our conversation, however."

“I take it this relates to the derailment at Little Bytham?”

“It might. Let me explain.”

I related what had transpired so far with Hilda, Nesbitt, Mott and Wardle, along with our suspicions about how the Petch’s might be involved. I concluded with “I believe we may, at this juncture, do best to tell the Petch family what we know and suspect, pointing out that they likely put themselves at risk if there is any mischief planned for the Railway, even if they are not the actors. I am not well-informed about the dealings of Oliver Mott, nor do I have knowledge of why the Honourable Mr. Wardle might engage with him.”

Oakley said “There are rumours that he made some bad investments and is looking to raise money quickly. I gather you feel that he or someone else is looking to depress the stock price of the GNR for some purpose.”

I replied “Yes. Though I suspect Saturday’s derailment will serve to diminish the share value, unless it is due to malice aforethought, and I have seen nothing so far to suggest that there was any outside intervention.”

Oakley said “To profit from a lower share price, one has to contract a sale at a future price, hoping to buy at a lower one. Unless the contract has already been made, a low share price now will eliminate the opportunity.”

“That is true. It still leaves vengeance as a motive for Mrs. Petch, and we do not know what Mott’s interests are, nor if Wardle has other plans.”

Armstrong said “We think it would be helpful to talk to the Petch’s and defuse the bad feeling. I sense that there is a quite general sentiment that they have had undeserved woes. From what Mrs. Brown has implied, they are afraid that even with hard work, they will not be able to avoid the Workhouse.”

“So you think some modest assistance – brass rather than gold – would remove that dissatisfaction?” Oakley asked.

Armstrong said “I cannot be sure, but I feel talking with the family would give us a stronger position than we have now. We could learn more about what has been going on with Mott, and how dire the situation is for the family.”

“I am of a similar opinion,” I added, “If there are plans to make trouble for the Railway – or if they have been executed to cause

the Little Bytham derailment – we need to have evidence to pursue those responsible. The Petch family have some public sympathy and are natural suspects. There may be more sinister actors using them to hide behind.”

Armstrong asked “Sir Henry. Is it possible that there are valuable shipments on some trains that a derailment could be used as a diversion to steal?”

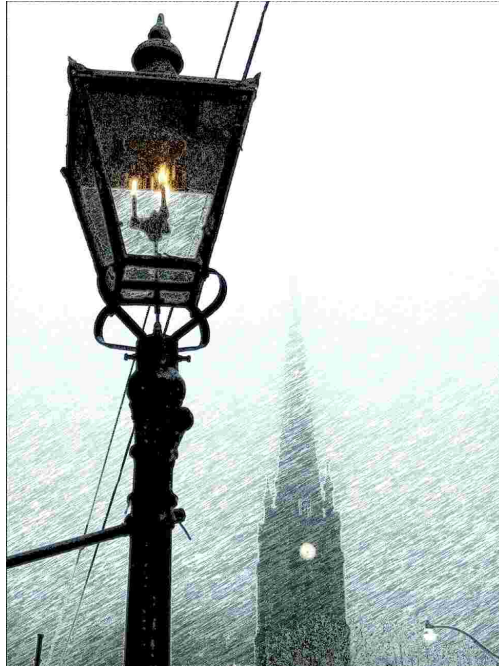
“An interesting conjecture, Mr. Armstrong. Indeed, a derailment would sow confusion that would make the thieves’ work easier. I think we had better see if we can learn more about what Mott and Wardle are up to. Of course, it may turn out to be a wild goose chase, but we have enough suspicions that we would be remiss to stop now. Can you ask Nesbitt to follow up on Mott? I will discreetly ask about Wardle. And please keep me informed about what you find with the Petch family.”

I rejoined “Actually, Sir Henry, I have contacted Sir Joseph Pease to ask to meet him confidentially to ask about Wardle. I did not wish to trust a letter, in that there may be staff who open correspondence for him, and telegrams pass through too many hands. Perhaps if you have other sources of information, it would be helpful to ask them, and I will undertake to report back what Sir Joseph has to say. However, I would suggest that some channels for private communication be agreed, given the sensitivity of the matter. For example, I suggest that letters to Mrs. Amelia Jenkins-Carr at my house address, which I will write down, will provide a way to communicate to me, and I will inform my staff to watch for letters so addressed.”

The others suggested similar possibilities, and we each wrote down the appropriate addresses, then turned to discussion of the issues of tracks and rolling stock related to St Neots and Little Bytham.

* * * * *

Cards on the table



That Monday evening I walked with Hilda to the Petch's house. Well, they had part of a house. Henry Armstrong and Nesbitt hired a hansom and waited a short distance down the street as a matter of security, though we did not anticipate any trouble.

It was dark and the gas lights gave little light. Anticipating this, I carried a lantern, and was glad of it for the narrow alleyway and unlit courtyard, though there was a glimmer of light from behind a curtain.

We knocked and Ethel Petch answered.

"Hilda – Mrs. Brown. Didn't expect you."

Hilda said "Ethel, I've brought Mr. Richard Carr to meet you. He and his wife hired me out of the Workhouse almost two decades ago. He wanted to meet you to ask some questions, and he may be able to help you and your family."

"Better come in."

There was a largish sort of kitchen with several cots. It was clear that they could be folded up somehow to allow the room to be used as the laundry. It had a large stove. There was another woman in a chair beside the stove who Ethel introduced as Mary Heap. She

turned to introduce Andy, but he said "Hello, Mr. Carr."

I responded "Andy was my driver a couple of months ago, and he was very helpful and attentive."

There were four children of differing ages besides Andy and they were shifted to the cots and two chairs found for Hilda and I.

I said "I'll explain why we're here. Your family has suffered both directly from a railway accident and indirectly because there is no proper arrangement to provide for victims of such events. My engineering consultancy has been engaged to review the risks to safety on the railways, and in that work we discovered some loose parts called fishplates, with evidence that they had been deliberately undone."

There were some guilty looks on several faces. I continued, "It has come to our attention that there may be people who are trying to use you and your situation to hide what they are really doing. We believe Oliver Mott has come to see you, for example."

"Well, I never," said Mrs. Petch. "Does that mean you've been spying on us, Hilda, if that is your real name?"

I said "Hilda Brown was hired by my late wife and I in 1867 and she remains housekeeper to my present wife and I, but she is also married to my partner, Roger Parks. Her brother works as foreman on railway maintenance, and her mother lives with him."

"Oh, I know them. Strong in chapel," said Mary Heap.

I continued "As I have said, we think you may be being exploited for reasons we are as yet to understand. However, we do know that Mr. Mott has been communicating with someone who is on the Board of another railway, and that communication was carried out in disguise."

"My goodness," said Mrs. Petch.

"It will likely do the Railway much more good to consider how to make your life a bit easier and to find those miscreants who might cause other families to be harmed if there are more incidents than to make accusations against you."

"Like Little Bytham?" Andy asked.

"Yes," I agreed, "Though we have found no evidence so far that there was any deliberate action to cause that, though the investigation is still at a very early stage."

Ethel Petch said "I dunno'. That Mott's a nasty bugger. People end up floating in the canal or are never found. He's never seen to

be there himself, but he has some thugs who do his dirty work.”

“So Mott has wanted you to do something for him?” I pressed.

“He’s come and suggested we’d get some cash for loosening those things – fishplates – you mentioned. But we’ve seen precious little cash, and now he seems to want us to do it, as he puts it, ‘or else’”

“But of course those menaces are not specified?” I added.

“Course not. Let’s us worry about who he’ll hurt or kill. Pretty easy to have a kid stumble under a cart wheel. That sort of thing. So we’re stuck with wondering how we’re going to put food on t’table and not be a part of Mott’s nastiness.”

“Well, I thank you for what you’ve told me, Mrs. Petch, and I have been talking with Sir Henry Oakley already about your situation. I hope he will take my recommendation to see what we can do to help you. I will not mislead you to believe it will be vastly generous, but I am hopeful that the Railway will realize it is in their interests to ensure the families of their staff are not thrown into poverty by events that occur while working.

Now if Mott communicates with you, I will ask you to let us know. I think that you could send information via Mrs. Armstrong, which is where Hilda has been acting as housekeeper, though she will be returning with me to her own husband and children.”

“You’ve children?” Ethel said.

“Three,” Hilda answered, “Oldest is now 18. Youngest is 12.”

“Well, George loved his job on the Railway. I wouldn’t wish what’s happened to us on any other family.”

“Thank you,” I said. “I most sincerely share your sentiment.”

“I believe you, Mr. Carr. Getting Hilda out of Workhouse and now she has a job and a family and ... did you say she’s married to your partner in your business.”

“That is so. I hired Roger when he was an apprentice, but he has worked his way up, and I have made him my business partner.”

“Well, I never!”

* * * * *

Hilda and I found Henry and Nesbitt in their cab. There wasn’t room for four, so I sent Hilda with Nesbitt back to the Armstrong house, to which Henry and I walked. On the way I apprised Henry of what we had learned.

“Clearly we need to know what Mott, and in turn Wardle, are up to.”

“And find a way to help the Petch’s and keep them safe from Mott’s thugs, assuming they are real,” I added.

When we got to Henry’s, Anna and Hilda had made tea and were in the parlour. Tea was poured and biscuits were passed round.

“Have we an accounting for the expense of Hilda staying here, including these biscuits and the hansom tonight?” I asked.

“I’ll prepare it,” Hilda said. She was also going to get a modest remuneration for her efforts, which had helped us make some progress.

“Mr. Nesbitt,” I said, “Do you have suggestions of how we should proceed to uncover Mott’s intentions?”

“I’ve one or two people who might be able to tell us his whereabouts, but I suspect a lot of people are afraid of him and won’t want to be seen as informants. Mrs. Brown – I suppose it is Mrs. Parks – told me what you learned from the Petch’s.”

“They as good as admitted they loosened some fishplate bolts. There may, of course, have been others, and that is a concern. Mott may just have wanted a scapegoat. But we don’t know the ultimate objective. It has been considered that he and Wardle might have wanted an accident to drive the share price down and profit from that, or else to use a derailment as a source of confusion to facilitate a robbery of valuable shipments.

“It also seems that Mott has not honoured his side of the bargain with the Petch family, but wants them to continue to commit mischief under vague threats.”

“Yes. Mrs. Parks told me.”

Anna Armstrong now intervened. “It’s a pity they cannot emigrate. I was reading how in western Canada the men can’t find wives and advertise in the newspapers. Mrs. Petch and Mrs. Heap are well under 40 and hard working. They’d probably do quite well out there.”

“Now Anna, it really isn’t your role ...” Henry was being patronising, and I interrupted. “That actually might suggest a solution to one side of our problem. The cost to the Railway for their passage and to cover partial expenses for, say, the first year or so would likely not be extravagant. We should work out the cost and if it is reasonable, suggest it to Oakley. It would get them away from

Mott.”

Nesbitt said “Cynics might say it put them out of sight, out of mind.”

“Yes, that could be so. But let us see if the idea is feasible, and then ask the Petch’s for their views. Their safety should be the first priority, then their ability to earn a living, with the Railway’s reputation well down the list.”

* * * * *

I had not made definite plans to return to Tunbridge Wells because I had not talked with Sir Joseph Pease. However, there was a telegram from him for me on Tuesday morning at Henry’s office, asking me to come to York to meet him that day for lunch. The journey was relatively short, and I was able to spend a little time with a couple of the junior engineers who were preparing figures on the estimated axle loading from several suggested changes to the Stirling Singles. I was impressed by their energy and inventiveness in trying some quite odd design changes. In turn, they appreciated some of my suggestions for safeguarding calculations with check columns or similar tricks.

Before I left for York, I suggested to Henry Armstrong that Hilda could return with me to Tunbridge wells on the Wednesday. She would likely need more time to pack than I.

Pease’ telegram told me where to meet him at a hotel in York. I had to ask at the station where to go, and it was fortunately only a short walk. As I approached the hotel, I saw Pease enter, and hastened to follow him in as I did not wish to attract attention by calling out. Fortunately, he was at the desk giving instructions about my arrival.

“Sir Joseph,” I said.

“Oh. You are here already, Carr.” Then to the hotel clerk “You may ignore my instructions, as my guest is here now. Am I correct that we have the Albermarle Room.”

The clerk answered “Yes, Sir Joseph. And Mr. Jones will be your attendant for lunch.”

Sir Joseph thanked him and led me up some stairs to a pleasant room that was clearly intended for private luncheon meetings, though the table was set just at one end for the two of us. A man

in livery followed us into the room and said "Good day, Sir Joseph. Would you like to order now or have an aperitif first?"

"I could use a whiskey. Neat. Will you join me, Carr?"

"Please. Also neat. Just a single measure please."

Jones went to a sideboard and poured our whiskeys, which I noted were a single malt. When he returned with them on a small silver tray, we each took a glass, and Sir Joseph said "Thank you, Jones. Can you give us twenty minutes in private, please?"

"Certainly, Sir Joseph. The menus are at your places at the table. The bell push is beside the side-board when you are ready to order. I will await your call."

Once he had left and closed the door behind him, Sir Joseph said "I gather you have discovered something that is of a sensitive nature."

"Yes, Sir Joseph. Let me bring you up to date with what we know so far."

I then related the various information relating to the Petch family, Mott and Wardle. I finished by saying "As we do not know the intentions of Mott and Wardle, and there may be need of confidential communications with you, I communicated as I did. Before I leave, I will tell you how I am communicating with Oakley, Armstrong and Ivatt. I communicate with Nesbitt through them."

"Yes, telegrams are read by a number of people in transit, and letters can be opened, sometimes innocently by a secretary. It would not do to let Wardle know we have suspicions, and I can tell you that this is not entirely surprising to me. There have been rumours that Wardle is in financial difficulty. He apparently made some bad investments."

"Sir Henry Oakley said much the same," I responded.

"The fear, I suppose, is that he is now mixed up in something desperate."

"Yes, or perhaps is being blackmailed by Mott to provide information or other aid in some scheme to get monies from the railways."

"You said that this fellow Nesbitt is looking into Mott's activities?"

"Yes. As far as he is able. One man cannot watch all hours, nor while alone can he communicate the need to follow those who Mott communicates with."

"I will see if we can find him some help, and also someone to look

more closely at Wardle's activities. There is some sensitivity given he is an MP, but that also makes it more serious if he is committing criminal offences."

"Presumably I should only mention dangers such as these in my report in a most general manner?"

"Yes. And especially we do not wish to give away any hint of our suspicions, though I assume there will be only one copy."

"We are engaging a stenographer, and will make one carbon copy for our own files, since you may have questions that refer to specific passages. But that copy I will keep in my personal strongbox so only I and my wife are able to access it. I will insist the stenographer work in our premises, by preference my own house."

"That would be best until the situation becomes clear. By the way, I heard that the material strength tables you are developing are generating some interest in the engineering fraternity. That is work that is tangential to the study, but nonetheless important, so I don't object to your continuing it."

"That is what we anticipated in my consultancy. And it has given us a few ideas for presenting some of the risks in the report."

"You alluded to possible solutions to the problem presented by the Petch family. Can you elaborate?"

"Mrs. Armstrong noted that there is a dearth of marriageable women in the west of Canada, to which I can attest from my own travels there. Indeed, my son and daughter-in-law live in St. Boniface, Manitoba, where he practices medicine. Henry Armstrong is investigating how much it would cost to provide passage to somewhere in western Canada with some resources to get Mrs. Petch and Mrs. Heap on their feet there."

"It is of course, a GNR matter, but I would support such a measure if it is reasonable. It would look more fair of the Railway, and take the family out of reach of Mott."

"They would also not be a reminder that the GNR appeared in a poor light regarding the Thirsk tragedy," I said.

"That too, is a sort of risk to us, though not strictly in the purview of your assignment. Shall we order some lunch?"

I answered "Yes, as soon as we agree how I may write to you confidentially. The others write to me at my home, using the name Mrs. Amelia Jenkins-Carr. Since my wife does not use Jenkins since our marriage, the form lets us know it is an important letter."

“Let me write a name and address for you. It is that of the late wife of my butler at my house here in York. I will inform the household that letters so addressed should be brought to my attention immediately. Now, for lunch I can recommend the chicken, or if your appetite is for something lighter, the vegetable flan.”

* * * * *

I stayed in Doncaster as planned until the morrow, namely Wednesday, March 11, and Hilda accompanied me back to Tunbridge Wells. Henry was nominally doing the investigation into the feasibility of subsidising the emigration of the Petch family, but Anna asked if she might do some of the search for information as it interested her greatly. Besides, Henry and I were involved with Henry Ivatt and some others in working out the design to rebuild the Stirling Singles.

We got back to Tunbridge Wells very late in the afternoon. I sent Hilda by hansom directly to her own house and told her she was welcome to come to Sans Pareil, our house where she was our first servant in 1867, when it was convenient to her on Friday, even if late in the day, so she could catch up with any business related to her own family and household. I knew full well that "late in the day" would be before noon, given that Hilda had been with us so long.

I was glad of the walk home, having had enough of sitting in railway carriages. Amelia and Betty both heard the door and I did not yet have it closed before they were in the hall.

“There you are. I got your telegram and cook has made a steak and kidney pie for whenever you feel hungry,” Amelia said.

I nodded to Betty, who disappeared back to the kitchen, then kissed Amelia and we went into the office and closed the door against the draught.

“Tell me about your trip,” Amelia said.

I related as much as I could remember of what had happened. Amelia asked some questions, which I answered as well as I could. The big unknown was what Mott and Wardle were intending.

Amelia asked “Do you think that they had a hand in the Little Bytham crash. It is very sad for the families of the young matron and the cloth agent who died.”

“So far we’ve no indication that the derailment was anything other than ballast shifting, and that likely because of the axle loading compounded by the lifting of the speed restriction. The train was going about 60 miles per hour when it derailed.”

“I never would have thought my life would involve axle loadings,” Amelia said. “And now loadings and breaking points are very much in my mind.”

“How are the tables coming?”

“Here. Take a look. I’m carefully recording the data into these line tables as we receive information, and doing so on tracing paper so they are ready to transfer to blueprint copies.”

“Excellent. That will save a lot of transcription and the consequent checking for copying errors. Though I suspect the recipients might be unhappy about the blue colour.”

“It does mean updated tables can be sent out quite inexpensively, Richard.”

“Yes, and we are not spending a fortune if it turns out the format must be altered. However, I think the use of the line tables is very helpful in showing the ... er ... distribution of values observed.”

* * * * *

That weekend we took some time for ourselves and family. I’m afraid we did not observe Lent. We invited Colin and Ethel to dinner on Saturday, even offering that the children could accompany them, but they decided a minor holiday from the children would do them some good. There were also some amateur dramatics at one of the schools, and Amelia had bought tickets for us all, specifying that the purchase was to aid the theatre group and we could choose not to attend if something else took our fancy or the weather were dreadful. However, we did eat fairly early and decided that we would at least take in the first act.

The play was an adaptation of the Merchant of Venice, and we found it well done.

We even found a hansom for Colin and Ethel easily, which meant they could get home to bed expeditiously. It also allowed Amelia and I to be abed before 11, of which I was glad. I find my business trips can be very tiring of late. I’m not sure if it is my age or if I am starting to be bored by the travel and hotel rituals.

“I thought Mrs. Baldock outdid herself with those shrimp vol-au-vents,” Amelia said.

“Indeed. She must have spent a great deal of time on that puff pastry.”

“I think Betty helped. Apparently they saw an article about them in an illustrated paper.”

“Should we ensure there is a subscription for such a superlative periodical for the house?” I quipped.

“Richard! You are awful. Well, I know you are teasing. However, I must say I almost agree with you. To get such a fine dish made for us was most agreeable. I will make sure to thank them.”

* * * * *

On Sunday afternoon the weather was not very pleasant, and I spent a couple of hours with my notes in the office. Amelia joined me, and when she saw me shuffling paper said “Do you have your expenses there? I should make sure all is recorded and tallied.”

“Indeed, here is my expenses book, with a few receipts. We must also put in amounts for Hilda.”

“She put an envelope on my desk here this morning on her way to church.”

I made some tea and we worked quietly for about an hour.

“Do you think we are about ready to distill our findings into a report on railway risks?” I ventured.

“From what I can understand – and you are the engineer, not I – we have reasonable descriptions of the principal categories of dangers to the railways along with some suggestions concerning how those risks may be mitigated. We are missing a good summary, and some of the data is woefully imprecise, but I think we are mostly ready to write the chapters, though a really good and succinct summary is needed to bring the project to a successful conclusion. I believe I may be able to construct one of Florence Nightingale’s Rose diagrams to present the different risks in a single illustration. We might, of course, need to use two diagrams to show the best and worst cases because data is imprecise.”

“Possibly three – best, average, and worst. Though how to do the average might be awkward. We’ll have to see.”

“How shall we proceed?” Amelia asked.

“Well, we’ve got the different chapters organized in the various envelopes. Perhaps you should try to consolidate one into a chapter and we can get an idea of its length and decide if we like the style. I’d like to have the chapters have the same tone and general ‘feel’, so we’ll need to watch how we proceed.”

“What will you do?”

“I thought I should try to prepare an introduction and conclusion.”

“That makes sense. How shall we prepare the copy for Sir Joseph?”

“Well, our plan is to hire a stenographer so the report can be typed. I understand carbon paper allows a second copy to be made, though possibly errors are more visible on the paper that is below.”

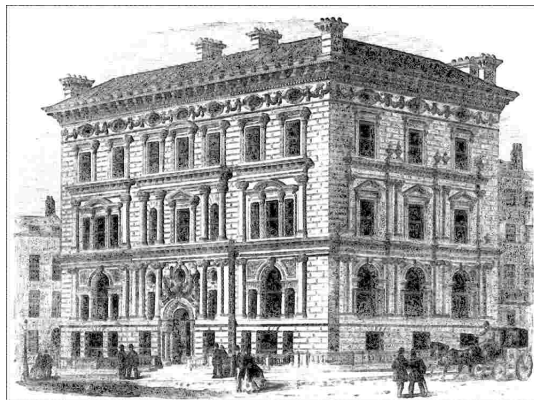
“I will look into finding such a person tomorrow. I will have to ask around in town. That was put on our list a while ago, and I am afraid I let it slip.

“Oh. While you were away, I heard that we will get the telephone quite soon. There has been some delay while wires are installed nearby. However, the office will get an installation in a couple of weeks.”

“Thank you, my dear. You keep everything running for me – for us.”

* * * * *

Testing the waters



On Wednesday, March 18 we went to London to meet with Mr. Culloden of the Railway Inspectorate in their offices near the Aldwych. We wanted to gauge reaction of someone who would likely be instrumental in promoting or obstructing our tables to our suggested format.

We arrived at about half-past 10.

“It is good to meet you Mr. Carr, Mrs. Carr. So far we are names on letters.”

“Indeed, Mr. Culloden, it is good to put face to name.

“I should explain that some of the ideas for the presentation of the tables of material strength flow from work by Florence Nightingale that my wife recalled from her nursing training. We wanted to get some reaction to their general suitability and appeal.”

Mr. Culloden was, from his accent, a Scot. He was of modest height and build, with a reddish beard specked with grey. I took out the tracing paper pages that made up the tables we were going to blueprint copy.

“Ah. These are your tables?”

Amelia said “Yes. For the first version, we thought we would transcribe the raw data into Playfair/Nightingale line diagrams. And we are thinking of using the blueprint method of making copies, at least for an initial attempt.”

“Thus avoiding the expense of typesetting, and more to the point the chances of errors, not to mention the tedium of careful checking.”

“That was our thinking. Do you think the blueprint copies will be acceptable?”

“I believe that since there is likely to be no equivalent, the users will have no choice. Moreover, I suspect most engineers will comprehend the reasoning is more about timely availability of correctly transcribed information. But let us consider the content.”

We spent the better part of an hour looking at the information that Amelia had done such a lot of work to commit to black and white. That her efforts were worthwhile was reflected in the interest Culloden showed in the information. Indeed, he made almost no comment on the design or style.

“Mr. and Mrs. Carr, I think I must commend you on a fine piece of work. You are fortunate to be able to share your work. Few of us get that opportunity, and very few ladies are interested in engineering.”

I said “It may surprise you that most of our computations are carried out by a small number of women. We have found ways to prepare templates for calculations, and one of our ladies helps us develop a per-calculation payment and distributes the work. The ladies can do that work when they please as long as the results are ready on time. My wife is also used to making measurements and paying attention to detail, and over time has become used to proof-reading my reports and managing the book-keeping, so now we are able to collaborate on different projects, though because her qualifications are not in engineering, any results that are considered a professional opinion must go out under my name. However, we did take the minor liberty of giving credit for transcription of the tables to ‘A Carr’.”

“Oh, yes. I see it now. Well, that is only proper. Now, I had thought to suggest that we repair to my club for lunch, but that is one of the institutions still strictly a male domain.”

Amelia said, “Do not fuss, Mr. Culloden. I anticipated that possibility, and wish to do some shopping in Oxford Street. Richard. I will meet you at 4 o’clock at the entrance to our platform at Charing Cross.”

* * * * *

Culloden had a membership at the Whitehall Club, which was favoured by a number of engineers. It was near the Houses of Parliament in Derby Gate, and a twenty minute walk along the Thames. As we walked, Culloden asked how my safety review was progressing.

“You are well-informed, Mr. Culloden.”

“The Major is quite interested and hopes to be allowed to read your report, Mr. Carr, though since the GNR / NER have commissioned your study, any access to the report will be at their prerogative.”

“That is, of course, the reality of our consulting contract. However, I am of the opinion that the majority of the report will be generally applicable. What Sir Joseph and his colleagues will wish to keep privy to themselves will, I hope, be quite minor portions.”

“In your consulting work, have you experienced cases where you are constrained to be silent on matters that might endanger the

public?”

“Fortunately, I have not. However, it is a troubling possibility. In the present contract, Sir Joseph has asked us to put a priority on safety.”

“That is good to hear,” Culloden acknowledged.

“There are some things we may not even be able to include in the report, and they are giving us some worries.”

“Are you able to tell me anything about them?”

“We have suspicions that there are some people who may be intending to profit by causing deliberate damage to the railways.”

“These are criminals, I presume?” Culloden asked.

“We believe criminals are involved, but so is at least one MP.”

“I will not ask who, as repeating suspicions could be a libel.”

“Yes, there is a need for caution, but also a need to try to find out what is planned,” I said.

We were by now less than a hundred yards from the Houses of Parliament, and had turned away from the bank towards the Westminster Club building. At that moment a hansom stopped across the road and two men got out. Culloden seemed very interested in them, and one was Wardle.

“I cannot help noticing your interest in the two men across the road,” I said.

“Well, one is Jeremiah Wardle, who you perhaps know from his membership of the North Eastern Railway Board. But the other is named Crockett, though his mother was a Baring, and he is employed and presumably an owner of that bank, though since the Panic of 1890, it has become a limited liability company, and is no longer the power that it was.”

“Ah, yes. They rather famously sold Louisiana to the Americans, having bought it from Napoleon, in an arrangement that avoided a direct sale by France to the Americans. That they should do so when we were still at war with France speaks volumes to the loyalties of bankers, I suppose. And unfortunately friction with France is again resurgent with the competition in the Sudan.”

“Indeed. But I see they have gone into the parliament buildings. I wonder what they are discussing. Wardle has been seeking money to stay afloat, I hear. Perhaps that is their business.”

I deliberated but a second or two as to the wisdom of sharing our concerns about Wardle, but Culloden’s own interest suggested that

there may be useful information to exchange, so I said "I only note that Mr. Wardle has come to our attention in his association with a suspected violent criminal who has tried to get some rather unfortunate people to do damage to the GNR tracks. Should information come into your possession that suggests he were trying to raise funds by illegal measures, it would be most helpful that such information be communicated to Sir Joseph Pease or Sir Henry Oakley, or sent via me to be transmitted to them. We have established some confidential channels because of the sensitivity of the situation."

"If I have news, I will certainly relay it. It could prevent a crash. Though my work is to investigate such events, I would rather they not occur."

Culloden and I walked back as far as Trafalgar Square, and I took some time to enjoy a brief exploration of some shops, mainly bookshops, in Charing Cross Road. When I met Amelia in the station, she had a small parcel, which turned out to be a protractor, a compass, and some other drawing tools.

"For the Rose Diagram," she explained.

* * * * *

March 18, 1896

Sir Joseph Pease,
Confidential address

Dear Sir Joseph,

I have just returned from meeting with Joseph Culloden of the Railway Inspectorate. Quite by chance, we saw Jeremiah Wardle entering the Parliament buildings with a Mr. Crockett of Barings Bank. Culloden expressed some concern as to their possible business, and I have asked him to inform us if he gains any information. However, I felt you should be informed immediately.

Yours truly,

Richard Carr

* * * * *

Diagrams and details

Breaking point (cwt.)	
80	X
100	
120	
140	X X X X
160	X X
180	X
200	X X
220	
240	X

Thursday, Friday and Saturday of that week, Amelia and I worked on the safety review report. We worked in our home 'office', and were surprisingly silent. That was likely because we had divided up the effort. Amelia was working on the chapters, which we had fortunately quite well-organized, since they would report what figures we could find about different risks. The introduction to each chapter had been written early in our work, and largely was a description of the types of risks to be discussed in that chapter, along with some salient particularities.

With the risk figures, if there were several estimates, we would use a line diagram. This left us a concluding paragraph or two for each chapter, and Amelia was preparing drafts of those.

The introductory chapter had more or less been finished by last Christmas, and we would leave its finalization until we had the rest of the report finished. That left the concluding chapter, which was still blank.

"Can we set out the chapters in order so each of us can pick them up to work on them and put them back when we are not looking at them?" I asked.

"We could lay them out over there on the carpet, but I would prefer if they were on a table or shelf," Amelia replied.

I went to the kitchen and asked Betty if there were anything we could use as a large shelf or table to lay out some papers. She

reminded me that we had taken down a pair of shelves from the room George, my son, had used. Those shelves were now in a storage space on the top floor.

“I think they would work if laid across a couple of chairs.”

We found the shelving planks in the attic area and brought a couple of chairs from the back parlour which was also our dining room. The makeshift arrangement was quite adequate for us to have the chapters laid out together with the notes and cards that pertained to each.

By Saturday afternoon, we had filled out all the chapters and had even made one complete pass each to edit for errors. We had written our report in long-hand on ruled paper with double spacing to allow for marking and correction. Even so, some pages we had had to rewrite.

Such editing and correction can create friction and stress. We were somewhat grumpy by Saturday lunchtime, but I said “You know, the report now seems to be quite in order, and I think it is of good quality. Thank you for your patience and forbearance with me.”

Amelia smiled and said “You are right. And there are no broken dishes or ornaments.”

“We have met our plan for the week, and we promised cook and Betty this evening off. Shall we go to the Bishops Down Spa Hotel?”

“Oh yes. That was where you asked me to marry you.”

“The only problem is that we do not yet have the telephone to be able to make a reservation.”

“The weather is not too bad. Let us walk there for six o’ clock and if they cannot accommodate us, we will have time to find somewhere else back in the town.”

I responded “That will be fine. After lunch, let us together look at the quality of handwriting and make sure our script is ready for the stenographer. Though I want us each to do one more review and edit, I thought it may be helpful to look at the document now, as I find a clearly readable script helps in the editing.”

“Yes, that makes sense. And we can make some notes on the space we will want left for diagrams. I thought to do them on tracing paper as we did with the material strength tables, ink the pencil lines, then trace again so we have two copies. I think we can paste the diagrams into the typewritten report.”

“I’m pleased you have given that some thought. It had escaped my attention.”

* * * * *

York
March 21, 1896

To: Amelia Jenkins-Carr
Sans Pareil
Tunbridge Wells

Dear Mr. Carr,

Thank you for your timely and prompt note re: Wardle. I have instructed Mr. Ralph Shaw and Mr. Daniel Cooper of our Railway police to assist Mr. Nesbitt in the investigation of Mott, Wardle and others.

I am going to ask one of these gentlemen to meet with you so that as much as possible of the context of our concerns may be shared.

Your continued attention and loyalty is appreciated.

Yours truly,

Joseph Pease

* * * * *

Doncaster
March 21, 1896

To: Amelia Jenkins-Carr
Sans Pareil

Tunbridge Wells

Dear Richard,

Anna and I have investigated the cost of passage to Canada. There is some variation in prices, but it would seem £10 per person would be enough to get them from Doncaster to Winnipeg. There are apparently two adult women, a youth (Andy) and five children of various ages. It is possible they may get a better bargain as a group. My suspicion is that some offer of the level of £150 would be reasonable, but if their relocation is to be assured, then passage plus an amount around £70, which would be a decent wage for a year.

Nesbitt has made some minor progress in identifying two associates of Mott, both of whom have in the past spent time in gaol for assault. A further concern is that it is known that Mott purchased a Webley Bull Dog revolver.

Oakley has met with George Lister, the Chief Constable of the Doncaster Borough Police to share this information, but as there is as yet no evidence of a crime, there can be no direct intervention. However, Oakley got the impression that the police suspected something was afoot.

Yours truly,

Henry Armstrong

* * * * *

I wrote back the same day as I received Henry's letter, using his wife's maiden name as agreed to his home address.

Tunbridge Wells
March 24, 1896

Dear Henry,

Thank you for the information on costs of passage to Canada.

I think before suggesting this possibility to Oakley or others in the Railway, we need to know if the Petch's would find it of interest to them. Can I suggest you send a messenger to ask Andy Heap to come you your house to arrange pony and cart hire as a suitable pretext?

The amounts are significant, but not exorbitant, though it may be prudent for the passages to be pre-arranged, as a gift of cash might be squandered, extorted (e.g., by Mott) or stolen. Arranging the travel, even to the extent of providing a 'send off' would provide some assurance.

If you let me know the response, I will communicate with Oakley, and also with Sir Joseph, who has asked to be kept informed. I can report that he felt the suggestion had merit, depending naturally on the overall cost.

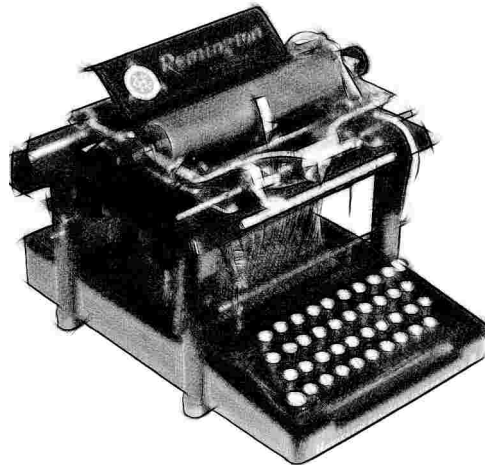
Our report is developing nicely, and we will shortly be getting it typed.

With our best wishes, and my thanks for your hospitality to me and especially to Hilda Parks.

Richard and Amelia

* * * * *

Completing the report



Amelia had found a local firm offering stenographic services. She and I visited their premises on March 24 to meet a Mr. Westlake, the advertised proprietor, but when we arrived, discovered that it was a Mrs. Westlake who was in charge. On being told we needed a report typed, she said "You could leave your material here and we will get it typed, either here or sent out to stenographers who work from their homes. The charge would be by the count of words."

"Is it extra for a carbon copy to be included?" Amelia asked.

"There is a small extra charge, yes."

I asked "Are you able to arrange a stenographer to come to our location? The material we have is somewhat sensitive."

"That could be arranged, but would, of course, be more expensive, and charged by the hour. You would need to provide a well-lit working space with proper chair and table. Also paper and carbon paper."

"I think that would not be a problem. Can you have one of your stenographers contact us at the address I shall give you? And would you have any particular recommendation for the brands of paper and carbon paper?"

* * * * *

On Wednesday when the doorbell rang just before one o'clock, I thought it might be someone from the secretarial agency, but Betty

announced a Mr. Ralph Shaw to us in our office.

“Thank you Betty. Perhaps you will be so kind as to hang up Mr. Shaw’s coat. Mr. Shaw, allow me to present my wife Amelia who is working with me on my assignment for the Railway.”

“Good morning, Mrs. Carr. Mr. Carr, I will show you this letter from Sir Joseph. He was particular that we should ensure we identify ourselves to you. That is, Mr. Cooper and I, but Mr. Cooper has remained in London.”

His accent was Yorkshire, but not as bad as that of Andrew Shaw.

“I take it you left York this morning, and that you are actually with the NER rather than the GNR.”

“That is correct. Sir Joseph felt that there was less chance we would be recognized by well, those we are investigating.”

I handed back the letter that simply introduced Shaw and had the signature of Sir Joseph I recognized.

“Would I be correct in assuming it is some time since you have had a meal?”

“That would be so, sir. But not to worry. It is common enough in my line of work.”

Amelia got up, saying “Betty will more or less automatically make tea, but I will ask her to augment the sandwiches and soup we were planning to have. We often eat here in our office, as on cold days, we keep the stove going.”

“You don’t have to, ma’am, but I will surely not refuse.”

“I will also find Mrs. Parks, as I believe she is familiar with the case.”

Shaw waited until Amelia had returned with Hilda and the door was closed, then said “From what Nesbitt has told us, Mott has been pushing the Petch family to undo fishplates and possibly more, initially with inducements but latterly with threats. I believe you know this, and Mrs. Parks was instrumental in getting the Petch family to cooperate with us, and with you in identifying Mr. Wardle as someone who met with Mott.”

“Yes. But perhaps there is new information?” I asked.

“Some observations and rumours perhaps. We learned Mott has acquired a revolver. He has been seen with a man known simply as Black Davy, a former navvy who makes money in the rougher taverns as a tosser out. And probably does other unsavoury things for money. He has also been frequenting the pawnshop of a Lucas

Murphy, an irishman whose real origins are murky. An informal communication from the office of Lister, the Chief Constable, suggests they think Murphy's shop is really just a pretence for fencing stolen goods and passing off monies obtained illegally."

"And Wardle?"

"My colleague Cooper is poking around in London as we speak, talking to some suggested informants and others. I will join him tonight. Nesbitt had already arranged the rental of a room in Soho that can be used for confidential communications to us in London. Apparently there is someone in the house who can receive messages. I will give you the address. Sir Joseph has given us the special addresses for confidential letters, and we will share others if they are needed. We will use Sir Joseph's butler in York and Mr. Armstrong's house in Doncaster. If you telegraph to London, send to Everett and sign as Jenkins. I have written all these down on a sheet here that you may keep, but please do so in a secure place."

"Have we any further information as to the intentions of Mott and Wardle?"

"Not as yet. Your observation of Wardle with Crockett the other day has suggested that there may be an attempt to rob a train carrying money, negotiable securities or possibly gold or valuables. And I believe you already know the suspicions that a wreck would be a possible diversion to assist such a robbery. Mr. Cooper pointed out that a derailment at some distance from where a robbery might be attempted could also be used to draw railway security staff away. In fact, that might favour the thieves, since a crash site will attract railway and other officials."

Betty knocked and she and cook carried in trays with soup and sandwiches.

"Thank you, Betty. Mrs. Baldock. Now I suggest Mr. Shaw stay in the armchair there but move that side table for your soup. Hilda take that other armchair so you may move the side table as well. Amelia and I will use our desk chairs. We won't be in a circle, but it will be easier to have a place for our soup bowls."

"This is most kind, Mr. and Mrs. Carr."

As we ate Hilda asked "How are the Petch's doing?"

"Nesbitt has told them to pretend to go along with Mott's requests, but to keep us informed via Mr. Armstrong. Nesbitt has arranged that we can react quickly if needed. Indeed, your brother,

Mrs. Parks, has been taken into our confidence so we have another man available to prevent real damage. If Mott wants something done, the Petch's are to seem to do it, but we will hopefully ensure that no real damage occurs. For example, we think Mott may ask for a fishplate to be removed and brought to him as evidence of the job. We will just happen to discover it five minutes before a train arrives.

"And Sir Joseph informed me personally that measures to get the Petch family away are being considered. It seems certain that Mott is using menace to the children as the lever to get them to do his bidding.

"We have also arranged with the Petch family that they launder items for several trusted people. Sometimes the children deliver parcels of clean items, and a bill is attached. If the name of the recipient is mis-spelled, we are to assume that there is an emergency. We got the idea from Mrs. Parks use of laundry as a way to begin communications with the family."

We continued our discussion in rather general terms, but there was not a lot more we could add. However, Shaw did have some photographs that he said had been acquired, as he put it, informally, of Mott, Black Davy and Murphy. They looked like police photographs of arrested persons.

"Look at them carefully. If you see any of them, let us know when, where, and in what circumstances or company. We have heard rumours, and I must emphasize that they are only rumours, that someone is planning a big criminal job. However, no names were associated with those rumours. This is a picture of Daniel Cooper so if you see him you may know he is one of us."

I said "Thank you, Mr. Shaw. Though I rather hope I won't encounter the villains. May I ask if the locomotive inspector Andrew Shaw in Doncaster is related to you?"

"My cousin. I expect you find his accent difficult. I've taken pains to change my speech somewhat so I am more easily comprehended."

Shaw left around half-past two. Hilda said "I do hope that Ethel and Mary are able to be moved. And that the thugs are caught and punished."

Amelia said "Yes. Richard, Do you think there is much personal danger to any of us from Mott and his cronies?"

"Likely very little danger unless we are where they try to carry

out some scheme at the time they are doing so.”

“Still makes me look over my shoulder,” Hilda said, as she returned to her housekeeping.

* * * * *

March 26.

The front door bell – we had installed an electric bell in the last year – rang at a quarter past nine. Betty showed a thin, rather severely dressed woman of age likely between 35 and 40 into the office, introducing her “Miss Caroline Hoskins, from the stenographic agency.”

“Welcome, Miss Hoskins. I am Richard Carr, consulting engineer, and this is my wife and colleague, Amelia. Betty, perhaps we could refresh the teapot.”

Amelia said “Take one of the armchairs there by the stove. We call this our ‘office’, though the consultancy has offices on the High Street.”

“Yes. I’ve seen them. And I’ve heard that you also engage ladies to do work for you, and not for typing or telephone work.”

“That is true. We have several ladies who do engineering calculations for us on a piecework basis. Arithmetic is not gender-specific. However, you will wish to know what work we have for you,” I responded.

“Yes. Mrs. Westlake sent a note that you had a report to be typed, and that you did not wish to have it handled through the regular job stream.”

“There are some matters in the report that could be sensitive and should be kept confidential. Would you be willing to sign an undertaking that states something like ‘I promise not to reveal any information I may learn through typing documents for the Richard Carr consultancy.’”

“That does not seem onerous. Truthfully, when typing one rarely pays much attention to the content. We have to focus on the words.”

“Fine, then let us consider where and how you will work. It could be in this room at one of the two desks,” I suggested.

“The light is good, but the height of the desk is too high. At home, where I usually work, I have a table that is lowered so my

typewriter will sit at a comfortable height for me to work. I could bring it here, but I'm not sure where it would be placed."

"Perhaps in the rear parlour," Amelia suggested. "We are not planning any dinners soon, and unless your table is large, it could be moved to a corner and covered."

"May I see the room?" Miss Hoskins asked.

At that moment, Betty came in with the tea. I had her set it on one of the side tables we have near the stove and our two armchairs for just this purpose. Our desks are in the bay window for the light, and perhaps for the welcome distraction of watching what is happening in the street.

"Betty, we're just going to look at the parlour as a possible location for Miss Hoskins to set up her typewriter."

"Certainly, Mr. Carr. I'll come along in case you need to arrange for anything to be moved."

In the parlour, Miss Hoskins quickly established that her table and typewriter would fit near the French windows where there was plenty of light. I asked Betty to make sure there was a fire laid so Miss Hoskins would not be cold on days when it was cool.

"That is most thoughtful of you, Mr. Carr," Miss Hoskins acknowledged.

"Will you need to bring a chair, or will one of the dining table chairs be suitable?" Amelia asked.

Miss Hoskins tried one of the chairs and said "One of these will be fine. They are of a good height and have a back that is curved to fit the human shape. In one of my engagements, there was a modern chair from a Scottish designer with a very high, absolutely straight back. It was very uncomfortable for typing."

We returned to the office and showed Miss Hoskins our manuscript, along with a sample of a diagram for which space would have to be left. There was a minor discussion of how we would handle the situation where the writing did not leave space at the bottom of a page sufficient for the diagram. Should the writing continue, and the diagram be at the top of the next page? Or would we simply leave blank space? After some back and forth, we decided that since it was likely either Amelia or I would be in the house, each situation could be considered as it arose. Moreover, we realized that the chapters did not require Miss Hoskins to work from beginning to end of the report, but she could set aside a chapter with an issue of

layout and begin on another.

“After leaving Mrs. Westlake, we went to Smith’s and bought a quire of paper and a package of carbon paper. They are here. Can you confirm that they will be suitable?”

Looking at the packages, Miss Hoskins said “Yes, those are fine. Better quality, in fact, than Mrs. Westlake uses in jobbing work.”

Amelia said “The clerk in Smith’s was helpful in suggesting that the higher quality allowed a thinner paper that would transfer the carbon better.”

I asked “Do we pay you directly, Miss Hoskins, or will we receive an invoice?”

“I keep a log – you will be asked to initial it – then Mrs. Westlake sends a bill and I get paid when you pay it. At least that is how it is supposed to work.”

“Sometimes Mrs. Westlake is slow in noting payments?” I queried.

“You could say that.”

“We run a consultancy. Slow payments are always annoying. Fortunately, we have some clients who are very prompt.”

“When shall I start?” Miss Hoskins asked.

“Would it suit you to start Monday morning? Oh, no. That is Easter Monday. So Tuesday then.”

“No, Richard, you are a week ahead.”

“Of course. Sorry. Then Monday. I suggest Miss Hoskins hire a hansom to bring her table and typewriter, and we will pay the driver.”

“Actually, Tuesday would be better for me, I have some work that can be completed by then, and it would be awkward to move the typewriter before it is completed.”

“Fine, we shall expect you, shall we say at nine o’clock?”

“Oh. Shall we prepare the confidentiality letter now, or would you prefer to type it so each of us has a copy?”

“I can use it as the first thing I do, which will let me ensure I have my table as I wish it for steady working.”

We had not finished our tea, and spent a few minutes exchanging information. Miss Hoskins was looking after her mother in a small house near High Brooms. They fortunately owned the house, but had to rent out two rooms for revenue, Miss Hoskins typing being the only other income. She seemed very interested in what we did in the consultancy. We learned that she also knew a form of shorthand.

* * * * *

Roger Parks had agreed to read our manuscript on Friday March 27, and I walked in early so he would have it available to him as soon as he was ready. He set himself at his desk and was about to start work when Crane said “Mr. Parks, you can use my apartment if you like. Then our conversations here would be less likely to disturb you. I have made the bed and the armchair is clear.”

“A good idea, Victor,” Parks replied.

I spent my morning reviewing some calculation projects that Gus and Crane were performing for different clients. Komarova was going to deliver the actual results around lunchtime, so our discussion was mainly about the procedures we had used and the formulae and assumptions upon which the calculations were founded.

Gus said “We need more tables like those for material strength that Mrs. Carr has been preparing.”

I didn’t comment on the fact I’d had some considerable input into those tables, as it was true they had become, in a way, Amelia’s project. Gus mentioned a couple of possible ways in which the calculations he had been managing for the strength of a bridge might be based on inadequate data regarding the material strengths or other parameters.

“What you are saying, Gus,” Crane said, “Is that we don’t really have good enough information on corrosion and how materials deteriorate with vibration or loads or temperature. August Wöhler has shown us how to see what will happen to materials over time with his S-N curves, but they just aren’t always available for the materials suggested for a structure or piece of machinery.”

“Precisely, Victor. We need to be able to look up the data quickly. And I suspect that the same bridge in Bombay will have a different SN curve from that in Montreal.”

I said “And in Montreal, when I went there in the middle of this century, I was astounded at how hot and humid it could be in summer, and how dry along with the cold in winter.”

“Those changes have to be very hard on materials,” Crane said.

I responded “I always wanted to consider how freeze-thaw cycles would damage stone of different types. Also different types of concrete, brick and mortar. In practice, we’d just repair things as we saw the damage, but we didn’t know the actual strength any more.

“For our present tasks, perhaps the best we can do is note our concerns and raise them with those who may be in a position to make measurements, like Wöhler in France or Kirkaldy here.”

Gus asked “Should we have a notebook with a wish list for information? It might be useful to use as a point of departure when we talk with other engineers.”

“Perhaps a card index?” Victor suggested.

“Why don’t you find a box for such cards and label it WISH LIST and we’ll do a quarterly review of the contents and update the cards or toss those that have been rendered obsolete. I think we’ll make that Gus’ responsibility, and I’ll suggest it be considered as a paper for the Institute in a while. It cannot hurt your reputation if you do a good job of it, Gus.”

“Yes. I’ll be happy to do that,” Gus said. “It will help keep me reading the journals and asking questions.”

Our conversation continued with more focus on the details of the work the two junior members of the consultancy were doing until around noon we heard Komarova ascending the stairs.

“Good day, Mr. Carr and Mr. Carr and Mr. Crane. Is Mr. Parks not here.”

“I’m here,” Roger said, coming out of the apartment in the rear of the offices. “And Richard, I’ve finished my read of the report. I can say I think it very good, but I made a few notes and questions of a minor nature. Also I questioned the spelling and grammar in a few places, but they are questions because my spelling was never my strongest subject.”

Komarova laughed “At least you have only one alphabet to consider.”

Now in her fifties, Komarova was a robust woman. We had subsidized the purchase of a bicycle for her a bit over a year ago, and she used this to get all over the place, always at a seemingly fast pace.

We took a few minutes to review the results Komarova had brought us. Then I said “Given that we have had a quite successful morning, would you all like to join me for lunch at the White Bear? I think the business can treat us.”

They all assented jovially. Just then we heard the downstairs door and someone coming up. It was Amelia. She had been shopping.

“Amelia. We were just going to the White Bear for lunch. Will you join us. I don’t think cook was expecting me back.”

“Nor I, Richard, as I thought I would catch you here and we could lunch together.”

We locked up and walked the short distance down the High Street to the public house. It was, fortunately, not too crowded this particular Friday. We found a table and pulled up an extra chair or two and Roger and I handled the drink orders. Komarova said “I will have some cider, please. And I think I like it better than vodka, which is not easy to find here, and would make the bicycle dangerous.”

“Did you put your lock on it,” Amelia asked. One of my cousins in the ironmongery trade has a sideline in bicycles and accessories and makes up lock and chain kits. They avoid thefts of opportunity. I had noticed Komarova’s bicycle by our building.

“If it is stolen, they will get the office drainpipe as well,” Komarova responded.

As we ordered drinks, I asked the barman what fare was on offer for lunch. It turned out there were ham, beef, cheese or egg sandwiches, a ploughman’s lunch, pork pies, and scotch eggs. When I ferried the first batch of drinks to our group I took out my notebook and pencil and got the orders. Gus and Victor had ham and beef sandwiches, respectively, Komarova a pair of scotch eggs, Amelia and Roger the ploughman’s lunch, while I had a pork pie. I returned to the bar and ordered these, paid for everything, and collected a mild and bitter for myself and a Guinness for Amelia.

When I gave Amelia her glass, she whispered “Did you make a note of the total for the accounts?”

I nodded “Easy, since I had my notebook out to record the food orders.”

Komarova was in a good mood and – probably more loudly than is usual in a British public house – said “Good health to all in Mr. Carr’s engineering firm!”

We all echoed “Good health!”

Some of the other patrons looked over at us quizzically, but we were only a little loud in our toast.

Amelia asked “How are your family, Anna?”

“Well, I suppose it is time to admit that Sergei, my husband, has not been home for nearly a year now. He left after Passover last

year, which started on April 9. This year it is this Sunday. Not that I observe the Jewish feasts any more, but Sergei got it into his head that he should follow his traditional religion, and he wanted to do so in Palestine, and so he packed a small bag and off he went.”

“I’m sorry to hear that, Anna,” I said.

“Oh. I was upset for a while, but more from pride at seeming to not be able to keep my husband. But life has been a lot better since he is gone. He liked to drink. And he never stayed in a job for any time. Now I make good money, thanks to Mr. Carr and his calculations. Not rich, but I can live comfortably.”

“And your children,” Amelia asked.

“Julia is now 28, and has, as I think you know, a boy of 6 and a girl of 4. Her husband is English, and they go to the Church of England, so we will have an Easter dinner. Probably a chicken. Julia knows I don’t eat pork. My small Jewish habit. I’ve found that I like shrimp. The rabbi would be angry.

“And Joshua is 25 and working for Cunard as a purser on one of their ocean liners. He gets a long leave about once a year and I see him then. He will come at the end of June, I think. But he writes regularly to me.

“I think Sergei’s leaving bothers them more than it does me. But it is what it is. When someone wants something badly, you can’t stop them easily.”

“Perhaps I should not have ordered a pork pie,” I said.

“Oh. Mr. Carr. Enjoy what you like. That I don’t eat pork cannot be explained easily. I have been known to have a taste of ham on occasion, and once tried bacon before I was told it was pork. I liked it until the image of the pig was in my head. Just the silliness of an old woman.”

“You must be a decade younger than I, Anna!”

“But you always have the air of a younger man. And I am not old, except in my avoidance of pork for reasons I cannot explain.”

Our rather jolly lunch went on for probably twice the usual time we would take for it, but it was a pleasant occasion, after which we returned to the office. Komarova departed on her bicycle toward the Central Station, outpacing two hansoms before she disappeared out of view. I wondered if she pedalled up Mount Pleasant or dismounted and pushed. The hill was quite steep.

Amelia and I gathered the report with Roger’s notes – he cau-

tioned us to watch out for the pins he used to attach notes. Then we walked home together, with the intent of seeing what Roger had noted. I realized at a moment in time that Amelia was carrying a parcel tied with string.

“Oh. I had not noticed you had a parcel. Have you been shopping?”

“Richard, I told you at breakfast that I was going to visit Madame Levoisier, the dressmaker. I think she is about as French as I am, but she makes much show of having a pretty salon, and her work is of good quality. I suspect she is actually Jewish like Komarova, but that her family has been in England for at least a generation, for I overheard someone talking in her back room in a decidedly East London accent.”

“Perhaps the important question is what did you buy?”

“Actually, it is something that was made for me. I went there over a month ago. I thought I would like a new gown for formal occasions. She showed me some of the Paris styles. However, I find so much of today’s fashions have a lot of decoration that makes them vulnerable to the smallest accident of dirt or damage. And they seem to want the corset to be such that breathing is impossible. But Levoisier – probably not her real name – has been trying some ideas of a Frenchwoman named Cadolle who has been making a small garment to support the breasts and not try to squeeze them to the top of the church steeple ...”

“What an inventive image!” I could not help but exclaiming.

“Well, you know what I mean. I know from my nursing work that I am neither fat nor thin, and that my bosom is neither tiny nor excessively large. Women used to wrap their chest or let their breasts ... er”

“Bounce?” I suggested.

“Richard! Well, I suppose that is not an unreasonable word. For myself, let us say I do not wish to bounce. So I have a new dress of a pleasant fine cotton, with the skirt overlaid with a semi-transparent silk. The top has a fitted bodice. The neckline in the pattern had a ... Madame used the word *décolletage*. I had her put some lace across the ... er ... ”

“Gap!” I volunteered.

“You are being annoying! Worse, because the words you suggest are appropriate.”

“I am pleased, my dear, that you do not accuse me of using inappropriate language.”

This got me an elbow in my ribs, but the jab was not malicious and we were laughing as we came in.

After we announced our arrival to Betty, who simply poked her head out of the kitchen, I suggested Amelia should try on her new acquisition so I could offer my approval. Meanwhile, I took the safety review report into the office and laid it out on the planks as it had been before.

I perused the first chapter for perhaps six or seven minutes, checking the spellings of some words with the *Century Dictionary* I had purchased when it came out a few years ago. Mostly – to my personal chagrin – Roger had caught some spelling errors. I left the grammar queries to discuss with Amelia. After all, she had been a governess, though that was a long time ago now. Then I heard steps on the stairs and Amelia came in, wearing her new dress.

“Oh. That looks exceptionally well on you. It will suit a number of occasions being neither frilly nor severe. And it is not so flimsy as to be limited to summer.”

“I am relieved that you like it. Being made to measure, I cannot easily return it.”

“Would you want to?”

“No. I think it looks very well upon me.”

“You wouldn’t take it back even if I didn’t like it?”

Amelia thought for a few seconds, then said “No. I think that my opinion is correct, and having so decided, I would go against your wishes.”

“Not that you have to. I concur that it is most fetching. But turn around so I may see all aspects. We would not want it to make the ... *derrière* look too prominent.”

“Again, I know from my nursing that I do not suffer from that affliction, but I suppose some clothes can give such an appearance. When I was training in London, I was walking home one day and two girls, who I suspect were tarts, were walking ahead of me and one said to the other *That skirt don’t ’alf make your arse look ’uge*. But I am sure it was the skirt that gave the appearance, as they were not overly plump girls.”

We were both laughing as there was a soft knock and Hilda came in.

“Oh. I hope I’m not intruding ...”

“No. We were just laughing at something Amelia heard in the street some years ago.”

Amelia explained, and we all laughed. Hilda said “Well, that really is a beautiful dress. I’m envious.”

“Do you want me to hint to Roger that he should tell you to go to see Madame Lavoisier?” I asked.

“I’ll ask him myself, but mentioning how nice Mrs. Carr looked in her new gown would be helpful, I think. Though possibly I’ll need to ask the dressmaker to be careful that my posterior is not amplified by the dress. I’m not as slender as Mrs. Carr.”

“You’re not plump, Hilda,” Amelia objected.

“No. I know I’m not. But I’ve quite wide hips and shoulders. They can make me look a bit more heavy than I really am.

“In any event, I came to go over the household accounts with Mrs. Carr.”

“I’ll come in the kitchen as soon as I’ve changed out of my dress, Hilda. Richard can continue what he is doing, which I think is checking spelling, if I am not mistaken.”

“Yes, that is so, my dear. and Roger has found a number of cases where, to my embarrassment, we seem to have dropped, added or exchanged letters.”

Eating a piece of Dundee cake later on that Friday afternoon with the cup of tea that was habitual when we were at home together, I asked “Am I correct that the household is running smoothly?”

“Yes, there has been some increase in our outlay for the house. Part of that is because we gave Hilda, Betty and cook a small increase at the New Year. Food and fuel has gone up a little. For many years it was stable or declined. And I think we have been indulging in a few minor comforts, or even extravagances.”

“Like this Dundee cake?” I proposed.

“And an extra lump of coal on the fire. Or the extra fire we will have laid for Miss Hoskins, though I do not consider that inappropriate. But that sort of small extra. Bundled together they have increased our household expenditure.”

“When did I last write you a cheque to keep your personal account in funds?” I asked, taking my chequebook out of my document case and answering my own question. “My goodness. It appears to be last October.”

“Well, you did bring back quite a bit of cash from a couple of your trips. I’ve been using some of that to bring down the amount in the strong box to about £ 50. But that target has been achieved, and my personal account, post Madame Lavoisier, is a little depleted.”

I wrote a cheque for £ 100 to Amelia’s credit and gave it to her.

“That’s much more than I need.”

“I want you to have enough in your account that you do not have to be tight with yourself. We have worked hard together. Your purchase today was well-considered. I believe it will be a garment from which you get quite a lot of use over a number of years.”

“Thank you, Richard. Your respect in that manner pleases me greatly.”

* * * * *

Over the coming weekend, Amelia and I continued to consider our report and its contents. There was still the nagging issue that we may be missing something important as regards deliberate attacks on the railways. Or rather, perhaps, that our communication of this possibility was too muted or too harsh. We were, of course, trying to express possibility, when our clients asked for probabilities or even something more concrete.

Overall, these worries led to very few actual changes in our manuscript. The most significant change is that we removed any specific reference to the risks posed by the perception, valid or not, that the Petch family had been given less help that they should have been. Instead, we couched such risks in general terms, pointing out that the Railway needed the general public to be neutral or favourable to them to encourage the reporting of malicious acts against the staff or property of the companies. We would put our recommendation concerning the Petch’s in a private letter.

We considered each of our other recommendations in the light of possible unintended consequences. If we made a recommendation that time and circumstances did not allow to be acted upon before something bad occurred, we would have compounded the damage to the Railway. When we looked at what we suggested, we only needed to make very minor changes so what we presented was unlikely to come back to haunt either us or our client. Indeed, we were careful to present recommendations in general terms, such as “mea-

asures to reduce the probability of single track collisions should be assiduously pursued” with specific tools given as possible examples. To recommend specific products or methods that might later prove inadequate could be unfortunate.

By the time we went to Palm Sunday service, the report was lying ready for Miss Hoskins to type.

Church was more full than usual. Christmas and Easter seem to bring people back to the fold. Going into church, Amelia and I greeted or were greeted by many acquaintances, but the press of people inhibited any true conversation.

Our present vicar is generally not given to inspiring sermons. Or in this case homily, since he based his peroration upon the Gospel reading about Christ entering Jerusalem on what the King James bible says was a colt.

The gist of the sermon was that Christ chose a donkey as his mode of transport to show, possibly among other things, that he was of the people, even though his entry into Jerusalem was triumphal. The vicar explained that a colt was the offspring of an ass, which made it a donkey. I am afraid these nuances escape me. He made more sense in noting that horses were used for war, while donkeys were work animals used for transport and conveyance, and connoted peace. He then pointed out that apart from walking, or being carried by men in a litter, biblical people had few territorial transport choices. Horses or donkeys were ridden in a city like Jerusalem. Camels and elephants might be used elsewhere, but not in the cities of the holy land. Horses and donkeys might pull carts or carriages, but the humble donkey was, he pointed out, the third class railway compartment of Christ’s time. It was an interesting suggestion. Of course, making a triumphal entry in Third Class could be a challenge.

It was pleasant enough that afternoon that we rode our bicycles out via Pembury to Kippings Cross and stopped for refreshment at the Blue Boys. That pub had apparently been built in 1584. An oast house adjoined the pub building and right beside was a large barn. A modest farm appeared to be part of the public house property, so the barn made some sense, though its location close to the main road was odd.

We could have chosen to ride via Matfield to Brenchley and Paddock Wood. However, we took a small tour down the Lower Green

area of Pembury and then returned home via Hawkenbury and settled in the office armchairs to read some newspapers and magazines. We decided we deserved to be lazy. Indeed, after a quite simple supper of ox-tail stew, we retired early and without amorous intent, falling asleep rather early. We had, I think, tired ourselves with the attention needed to prepare the safety review report as well as our bicycle excursion.

* * * * *

On Tuesday, I was reading how Oxford had won the boat race again when Miss Hoskins arrived at five minutes to nine. Her table was wrapped in a blanket and tied to the roof of the hansom, while she had the typewriter inside the conveyance. I paid the driver, then carried the typewriter to the parlour, noting it was surprisingly heavy. Betty and Miss Hoskins managed the table, which I could have handled alone, but no matter. Amelia dealt with the doors, so they did not blow shut at inconvenient moments. By five past nine, Miss Hoskins was set up and ready to begin.

“Do feel free to ask for tea,” Amelia said. “We were remiss in not mentioning that luncheon will be provided here in the parlour. And the WC is at the top of the stairs. If you have any questions about our handwriting, one of us should be in the front room that we call the office.”

“I did already think of one question. Do you want the report to be paginated? If so, should it be from start to finish, or numbered within each section?”

“With section numbering, you would need to have something like 3 hyphen 2 for the second page of the third section, would you not?” I asked.

“Yes, but should you later want to expand a section, you would not have to repaginate the whole report,” Miss Hoskins replied.

“Then section numbering seems to be more sensible, Richard,” Amelia commented.

“Then let us do section numbering. Thank you, Miss Hoskins, for thinking of these things in advance.”

“It is, after all, my job, Mr. Carr.”

* * * * *

Passages



Doncaster
March 29, 1896

To: Amelia Jenkins-Carr
Sans Pareil
Tunbridge Wells

Dear Richard,

Andy Heap came to our house on Friday and we talked briefly about the possibility that the Railway might be persuaded to fund passage for the family to Canada. The young man himself was very excited by this, but naturally said he would have to discuss it with his family. Last night one of the younger children brought a note (as we had previously arranged) that simply said "Arrangements as discussed would be suitable". The child added that there is someone who they know in Calgary. So it is now up to the Railway.

Anna and I enjoyed having Hilda here. You must remember that she and I would meet from time to time when I was

an apprentice with your consultancy. And we are not so different in age and interests, so enjoyed catching up with each other. It was also fortunate for her to have some time with her mother and brother. The latter, of course, I have met from time to time. I am also very pleased to hear how well Hilda and Roger Parks seem to have prospered.

I will look forward to learning more of your report, and am hopeful that the management will see fit to share the content with those of us at the working face, so to speak.

Ivatt has more or less settled on the modifications to the Stirling Singles to reduce axle loadings. He kept several of us busy trying out drawings and calculations until we settled on a suitable compromise, for that is what it must be, given that we are not building new.

Now the serious work begins, as enlarging the frames will require the heaviest tools.

Our best wishes to all we know in Tunbridge Wells,

Yours truly,

Henry Armstrong

* * * * *

Tunbridge Wells
April 2, 1896

Sir Henry Oakley
Copy to: Sir Joseph Pease
via the arranged addresses

Gentlemen,

Henry Armstrong has been in communication with the Petch family and they have indicated that they would be interested in passage to Canada. They apparently know someone in Calgary. From some investigation, it appears that passage and some funds to ensure a good start would total about £ 150.

The decision to carry forward this suggestion rests, of course, with the Board of Directors, but they may call on Mr. Armstrong and I to assist as required.

I remain, gentlemen, your obedient servant,

Richard Carr

* * * * *

Good Friday was, of course, a holiday. Oddly it had not been included in the Bank Holidays Act of 1871, though Easter Monday was one of the four holidays listed. Good Friday was considered to be a holiday under the common law. The government were no doubt cognizant that taking away a holiday might lead to public disorder and insurrection. I smiled to myself thinking that it would be an interesting prank to include "government nullifies Good Friday holiday" as a risk to Railway assets in our report. Of course, during the French Revolution, the entire calendar had, for a time, been replaced.

Despite the short week, Miss Hoskins had managed to complete the typing of three quarters of the report. Moreover, she had spotted several minor errors of spelling or grammar our multiple reviews had missed, and had suggested some stylistic choices that improved the overall appearance of the report. We were very pleased with her work.

On Maundy Thursday at lunch, I asked "Will you want to take your typewriter and table home for the long weekend, Miss Hoskins?"

“I had not thought of that, but if I may take an hour to walk to see if Mrs. Westlake has some work for me, then I could do that, though I would need to take a hansom.”

“Your work has been of such a standard that we will cover that cost. There is a budget for expenses in our contract with the NER.”

“Oh. That is most helpful to me. My mother and I live very quietly, so I will have considerable time to perform remunerated work if it is available.”

* * * * *

With the holidays on Friday and Monday, Easter allowed for a four-day break from the usual rhythm of our household. On the afternoon of April 2, Hilda brought in our tea with some cake. We could hear Miss Hoskins’ typewriter clacking vigorously in the parlour.

“Thank you Hilda, will you join us?”

“Let me take a cup and some cake to Miss Hoskins, and I’ll come right back.”

A very short while later the typing stopped and Hilda reappeared. She said “As Mrs. Carr requested, I talked to Betty and Mrs. Baldock about Easter. You may be aware that on Saturday, Roger and I are taking the family to Eastbourne for the day, and on Sunday we’ll have Roger’s sister Judith and family to dinner, as well as his father. Judith and I will share the cooking, happily. And Monday we will, I think, have a lazy day and eat what is left over. But the reality is that I was not intending to come here until Tuesday.

“At the beginning of the week, as you asked me to, I informed Betty and cook that you would be happy with meals either cold or possible to heat, and there will be ample stocks of ham, cheese, two savoury pies and two sweet ones, with a fresh loaf of bread baked today. We always keep a stock of eggs on hand, as they are so useful for a quick meal. I knew your only requirement would be that someone was about the house most of the time, as I know there is some work of importance at the moment, and there could be messages. Also I ordered some bread and milk to be delivered on Saturday which should last until Monday if kept in the cool. Cook made sure there is a good stock of lemonade, ginger beer, bottles of brown ale and cider. There are some potatoes, carrots, and a turnip.

There are also some tins of different foods that we keep on hand. So you will have plenty to eat, but may have to assist whoever is here in their preparation.”

“Thank you Hilda for making sure we are well-provided,” Amelia said, laughing. “Our problem will be one of decision. But I think we may ourselves be out some of the time. Have Betty and cook made their arrangements?”

“Yes. Betty is leaving tonight to go to her sister’s and coming back Monday morning early so cook can leave to go to her brother in Ramsgate. She will come back Tuesday morning. Betty will cover her duties for a day sometime in the future. I trust you don’t mind.”

I said “You’ve known us for a long time, Hilda. If the job is done properly, the manner of execution is unimportant. Allowing staff some flexibility in their personal lives is more likely to gain us better service than insisting on some schedule.”

“From conversations with servants in other households, you and Mrs. Carr are in a minority, I’m afraid. However, I am strongly in agreement. Moreover, this household seems to be an easy one to run, though I think that may come from the inhabitants working together to make life easier for each other more than any specific advantage to the house itself.

“I must confess lately to finding myself wondering where I fit, and Roger is now partner in the firm, so I could myself have one or two servants. Roger has even said so. It is, however, not part of my upbringing or experience.”

Amelia said “Do not agonize over it. Your employ here is of long standing, and now is not full time. We could very easily manage if you decided you did not wish to continue, though sincerely we hope you will stay. But perhaps you should think of engaging someone and give yourself a treat.”

“If I do, I will try to follow the example set here and engage someone from the Workhouse or similar to give them a better chance in life.”

“We can strongly endorse that sentiment,” I concurred.

* * * * *

Food and flora



Amelia and I were, as it happens, going to Kew Gardens for Saturday, but in order to be there when the gardens opened, we had arranged some weeks before to stay in a guest house nearby on the night of Good Friday. Kew had been a place I had taken Geraldine when it became apparent her cancer would kill her and that she was too ill to be taken to a warmer clime during winter. The idea of the Palm House appealed. Geraldine had talked about it when Amelia – who had until now not visited Kew – was nursing her.

Amelia had learned of the guest house through one of her former nursing clients. We took a lazy morning on Good Friday before our departure. Hilda or cook had thoughtfully bought some hot cross buns on Maundy Thursday. We toasted them on the top of the boiler by removing the top plate and putting a triangular wire rack there against which the cut side of the buns could rest. We had difficulty deciding whether plain butter, Dundee marmalade or strawberry jam were the best topping, and in attempting this decision ate more half buns than we would normally do.

Good Friday travel was slow due to reduced schedules, but we got to our destination in Richmond without any difficulty. Our hostess, a Mrs. Dunsmore, was expecting us. There was an intriguing smell of something savoury wafting from the kitchen. Despite her very English name, Mrs. Dunsmore was clearly not of Britannic origin. A short, rather dark woman of perhaps 45.

“Dunsmore, my ’usband. ’E ’ad to go out, ’elp neighbour with pipe that drip, drip. I tell ’im you coming and I need ’im talk you in English. But room is ready. You follow me.”

We were shown our room and pointed to the ablutions and WC. Everything was tidy and clean, but just a bit ... well, not like the usual English guest house.

“The dinner. At half past six. I see you then.” And Mrs. Dunsmore was gone.

We used the WC and then looked at each other, rather wondering what to do. It was just before five o’ clock and would be light until after we had to be back to eat.

“Shall we go for a walk by the river?” I asked. The guest house was on the north side of Kew Bridge. Indeed, we had alighted from the train at Kew Bridge Station, perhaps 150 yards away.

Amelia agreed, and we descended to the main floor and I called out “Mrs. Dunsmore, we are going for a walk, but will be back in good time for dinner.”

A head popped out from the kitchen and Mrs. Dunsmore said “Walk. Very good by river. Pretty. I think you like.”

Indeed, we enjoyed our walk by the river toward Chiswick, then back through various minor streets to the Great West Road that brought us back towards Kew Bridge. By the time we got back, Mr. Dunsmore was home. He was a tall, spare man of perhaps fifty.

“I’m sorry I was not here to greet you, Mr. and Mrs. Carr. One of our neighbours is an elderly lady and her kitchen tap came loose and was spraying water.”

“Your wife implied it was simply dripping, but I surmised it must be more serious,” I said.

“Maria’s English is somewhat awkward. But I hope we will learn more about each other over dinner. It is almost ready. I will assume you wish to wash up beforehand.”

We took our cue and freshened up before returning to the main floor, where now a door was open to what was obviously the dining room. At a large table, there were just 5 places set, when it was clear 10 could be accommodated. Mr. Dunsmore was at the head of the table. The foot was near to the kitchen but two places were set on one side that was away from the kitchen. There was also a single setting on the kitchen side.

“Please take your seats,” Dunsmore said, waving to the two seats that were side by side. “Our regular inhabitants are away for Easter. Actually, we normally do not have short-term guests, but because they are away and you were recommended to us by my cousin, who

I believe Mrs. Carr assisted through a difficult confinement, we felt it only right to welcome you.”

Amelia said “Mrs. Crawley is your cousin, then. Actually not that difficult a birth, though the labour was a bit longer than usual. Do you realize, Richard, I was called away right after you gave me this engagement ring?”

“Of course! Mr. Dunsmore, you may realize my wife is somewhat younger than I. We met when she was nursing my late wife through a fatal illness. We met some months later and started a conversation leading eventually to our marriage, which I believe has been a happy one for both of us.”

“A happy marriage makes for a good life.

“Maria! Posso versarti del vino?”

“Sì. Grazie” came the reply.

Dunsmore poured us all some wine from a bottle without a label.

“My wife, who makes me very happy, is from a small village in Umbria. I am an importer of wine and other comestibles, mainly from Italy. We met almost fifteen years ago when I was on my first buying trip there, and Maria was the cook in the villa where I had a room. We had both been orphaned and found much in common – especially food and wine.

“I do hope you will enjoy a typical Italian meal.”

“If it tastes half as good as it smells, we will enjoy it immensely,” I said.

At this moment, Maria, as we would come to call her, carried in a platter of various items, most of which were unrecognizable to Amelia and I.

“Antipasti,” Maria announced, taking off her apron to reveal a neat and well-tailored costume that she had clearly changed into while we were walking.

Dunsmore said “Antipasto is something to wake up the appetite, and antipasti is the plural. Here we have prosciutto, a dry cured ham. These are artichoke hearts, preserved in olive oil. Here are black olives and green olives. These slices are preserved pimento, red, green and yellow. The cheese, very mild and white, is mozzarella. The little fish are anchovies. Very salty.

“We will also have a pasta course, then a main course of veal, and finish with coffee and amaretti. I will explain things as they are served.

“But first, a small toast. To new friends.”

“To new friends!” we echoed.

“Is it appropriate to try a little of each?” Amelia asked.

“Of course!” Maria said. “It is for you enjoy.”

We tried a bit of all the items. I found I very much liked the artichokes and the mozzarella cheese and the pimentos. I found the prosciutto had a slightly musty taste and a smell of pig. The anchovies were extremely salty. Possibly with some bread they would be more to my taste. I found I preferred the black to the green olives. The latter were also very salty. The robust red wine was good to clear the saltiness, but I would be glad not to have to try to get further than our room if I were not moderate in imbibing.

Amelia asked “With more courses to follow, I presume we should not eat too much of the antipasti?”

Dunsmore said “Maria would be happy if you cleared the platter, but you will probably want to save some appetite for the other courses.

“Sofia! We are ready for the pasta.”

A young woman who we had not seen before appeared and took away the platter and then collected our plates.

Dunsmore said “This is Sofia, who comes from Umbria also and is working for us and learning English.”

The young woman – she could not have been more than sixteen, nodded to us.

After a minute, she returned with a tray with bowls of something like macaroni, but longer and thinner and slightly flat. She said “Linguini al sugo di pomodoro e funghi”.

Dunsmore explained “Linguini – long flat pasta meaning little tongues – with tomato and mushroom sauce. There’s garlic also, almost a requirement.

“Usually, but optionally, grated parmigiano cheese is added.”

Sofia was now holding a lump of what looked like very dry cheese and a sort of rasp. She held it towards Amelia’s plate.

“Yes please,” Amelia said.

I followed as did Dunsmore and Maria, then Sofia put some on her own dish that I had not noticed placed at the extra setting. She then sat down and joined us in eating.

“If you haven’t eaten such pasta – it has a meaning like pastry, but it is boiled rather than baked, and macaroni is one style – you

may want to watch how we use a fork and spoon. And you may want to tuck your serviette in your collar like this,” Dunsmore advised.

We followed his advice. The long strands of linguini were not easy to eat. It took us several tries to wind the linguini around the fork using the spoon as a guide. When I did finally get it to my mouth, it was a wonderful savoury experience.

Sofia cleared away the bowls, and was gone a while in the kitchen before returning with two plates for Amelia and I, then for Dunsmore and his wife, and finally herself.

Dunsmore said “Sofia. Why don’t you explain the dish?”

Sofia seemed shy, but then said in a slightly accented but clear voice, albeit rather stilted. “Veal with marsala sauce, boiled potatoes, boiled carrots, and cabbage with apple and walnuts. Please enjoy.”

Enjoy we did. Normally cabbage is a very dull vegetable, but this form was most tasty. And the veal! I have difficulty in describing the thin ovals in their delicate sauce that reminded one of an oloroso sherry.

We also found our glasses of red wine stayed full. I gave Amelia a slight nudge to warn against over-indulgence.

Through the meal, we shared information about ourselves with the Dunsmores. It appeared there was a growing Italian community in Britain who wanted products they missed from their homeland, as well as an increasing number of Britons who were acquiring a taste for them. The major issues were of arranging the purchase and shipment of goods so that they were not pilfered en route. Payment was also sometimes difficult with the small producers in Italy who did not deal with banks. There were agents, of course, but each wanted his commission, and the scale of purchases was such that the agents wanted at least some minimum per transaction, making the relative price quite high. Dunsmore had found it expedient to establish his own agency to make purchases and consolidate the shipments of goods so they could be strongly crated.

I asked “How did you recruit an agent?”

“A younger cousin of Maria came to us to learn English. He has set up an office in Siena. Sofia is his sister, and she wishes to become part of the business too. It is better to keep things close to the family.”

We talked a little of our own business, and how we also kept our

activities in what could be called our family, since Amelia worked with me, and Roger had married Hilda, and Gus was a cousin. Dunsmore, like many people in our society, appeared content to live with the benefits of engineering in the form of trains and bridges and ships without much thought to how they functioned. Thus we talked more of where we had travelled rather than the work we undertook.

We all took a break from eating while the coffee was prepared. This was good, as I felt my stomach tight against my trousers. Fortunately, there was no pudding, just some delightful small and crispy cakes or macaroons that were called amaretti. I ate two. It was hard not to reach for a third.

* * * * *

We were able to leave our valise – for a single night we shared just one – with the Dunsmores while we spent most of the Saturday at Kew. We had been fed a good English breakfast – Maria rather comically said “English know breakfast. Italians know dinner,” with which I found I agreed. Thus we had just a snack in the middle of the day in a tea room we found at the Gardens. There was, of course, too much to see in one day, but we did not let that concern us, instead following our noses and enjoying what we did encounter.

By four o’clock we were tired and footsore and hailed a hansom to the Dunsmores and then onward to Kew Bridge Station. We descended to the platform and I asked Amelia “Shall we try for dinner at Simpson’s in the Strand, as in 1883 after George and Sophy left?”

“After last night, I’m not sure I could face a large meal. Would you be terribly disappointed if we just went home and had some of the cold meat pie. If we stoke the boiler, we could soak in the bath and ease our aches.”

That is what we did. We were most fortunate that our trains connected rather well, and we were home not much after half-past six. I found that the boiler was, in fact, set to a slow burn and there was hot water. Cook had left a note on the kitchen table that she would be out to a choral recital until half past nine approximately.

Amelia said “Would it be too decadent to have a slice of pie and some cider in the bath?”

“Ah. The difficult philosophical questions: decadent surely, but perhaps it is not in the category of too decadent.”

We laughed and quickly prepared the tray before ascending to the bathroom.

* * * * *

We went to church on Sunday. Easter service so the pews were full. We told the verger he could offer a pair of places in the pew we pay for to anyone standing at the back and two elderly ladies joined us, effusive with thanks.

The vicar was more than usually uninspiring. Here he has a large captive audience. However, I find it hard to imagine more than one or two in that crowd who would be excited by theological details. Especially details presented as if they are elements of the 29 times multiplication table. Usually I believe myself to be of a charitable disposition, and the vicar is personable, assiduous in caring for his flock, and well-intentioned. His sermons, however, really do need to be improved in content and delivery.

After the service, we did not return home, but made our way to the West Station, as we were meeting Michael and Mabel at Forest Row, where there was a train halt, then walking into East Grinstead to join them for a meal. Given that we wanted to carry some refreshments for our walk, and that the time from breakfast to our late afternoon meal with the Buckleys would be a number of hours, I left home earlier than Amelia and detoured via our High Street offices, which were almost on a direct line from Trinity Church to the West Station, so I could deposit a rucksack there with some refreshments and an umbrella. When we picked up these items on our way to the station, we could use a WC that was sure to be available and clean.

We informed the guard of our train that we would alight at Forest Row, which we reached about half past one. Mabel and Michael were there already. The line is a single track, and their train had arrived some twenty minutes earlier from East Grinstead, which was distant not more than a three and a half miles. We were going to walk the return. Fortunately the weather was fair. Normally it would take about an hour, but we chatted and dawdled. A great pleasure. We encountered others, some with dogs, and found a bench where we

had some savoury biscuits, cheese and lemonade.

When we got to the Buckleys' house, Michael poured us each a modest glass of beer, and we continued our chat for a few minutes. The armchairs were, however, more powerful than I had imagined and soon Amelia had nodded off.

Mabel said quietly "It is a signal that you feel comfortable here with us. Do not feel you must stay awake. Dinner is an old-fashioned lamb hot-pot, and I have turned down the oven so it will not dry out but will cook gently until we are ready."

Thus it was that we all slept or napped for a while, something that true friendship allows.

Around five, we moved to the table and enjoyed the simple but tasty fare. Mabel asked about our Kew visit, and we told them of our experience with the Dunsmares. Michael said "I docked once in Genoa and once in Civitavecchia, the port for Rome, and was fortunate enough to see some of the great sights, as well as enjoy some of the food. It is much different from our English fare, but I can say I enjoyed it."

"Here we limit ourselves to macaroni and cheese, as per Mrs. Beeton," Mabel said with a tone of complaint.

"I wonder how difficult it would be to mimic some of the dishes?" I queried.

Amelia said "I asked Sofia how the veal was prepared. She said she used a wooden mallet – she said hammer – to render a veal steak very thin. It was then dredged in flour to which pepper and some herbs had been added and fried quickly in butter, then some chicken stock and marsala wine was stirred in to make the sauce. The flour on the veal thickens the sauce slightly.

"The cabbage served as a vegetable was just lightly cooked with some thinly sliced apple, then crushed walnuts were stirred in before it was served."

"The dishes do not sound too difficult to make," Michael said.

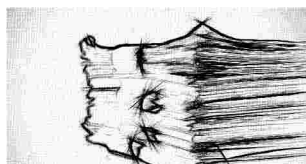
"I think it is the acquisition of some of the accoutrements like the parmigiano cheese or the artichoke hearts, or the pimentos, that makes the overall meal a challenge to prepare," I offered.

Mabel said "I did see some pimentos growing last year. One of the church ladies was trying them. She thought they would only be green, but she did not pick a couple of them right away and they turned red in parts, and one went fully red. But I've no idea how

they would be prepared or eaten.”

* * * * *

The push to the end



We spent much of Easter Monday proofreading the typescript of the report so far. In total we found but a single typing error, which was a reversal of the order of two letters in one word. We were pleased at the layout and spacing, and Miss Hoskins seemed to have a fine eye for where the diagrams should go.

Given the large meals on Friday and Sunday, we ate moderately on Monday. Betty was back, and joined us in a mushroom omelette with toast, followed by some apple pie. We then settled into our office armchairs with some illustrated newspapers and books that Amelia insisted not be about engineering.

* * * * *

Miss Hoskins' typewriter was busy at half-past eight on Tuesday. We talked to her briefly before she started, expressing our delight that the work was so tidy, with only the single error that was, we thought, repairable. Miss Hoskins agreed, saying that repeating a page could be a frustrating exercise, as new errors may be introduced. Nevertheless, it was preferable to avoid such errors.

I had my second cup of tea and was sitting at my desk with *The Times*, when I spotted a story about a crash on the Snowdon Mountain Railway. Worse, this occurred on the opening day. I had been interested in this modest line, which was the only rack and pinion railway to date in Britain. The company also was unique in that it built its line entirely on private land and did not need an Act of Parliament.

Later I would learn more details of the accident, which was really two disasters. The first occurred when the No. 1 locomotive and two carriages lost the rack and ran off the rails. A passenger jumped from the train and was injured in a way that he died from loss of blood. Then miscommunication led to a second train following the first down the mountain and into the carriages of the first, fortunately without further fatality.

I showed the story to Amelia. She expressed some annoyance. “Damnation, Richard. Now we will have to alter our figures, as we have another fatality and two accidents to categorize.”

“The journalists, even with *The Times*, rarely are precise enough in their description to allow a proper assignment of cause. In this case ‘losing the rack’ suggests to me that the train may have been overloaded with passengers. After all, the hill is steep – I read that the steepest part is 1 in 5.5. Thus if we put 1 over 5.5 we have the sine of the angle of the hill. The force of the train along the track will be its weight times that sine value, so we divide the total weight of locomotive and two carriages, including cargo and passengers, by 5.5 to get the force between the rack and pinion. That is, the force on a single tooth of the pinion against the single ridge of the rack is given by that value. Given the narrow gauge of the track and the small engines that I believe they use – they even have sloped boilers so the firetubes do not run above the water – we might guess 10 tons for each of the locomotive and two carriages, plus perhaps 150 people at 15 to the ton, so 40 tons divided by 5.5 is about 7 tons force on the pinion tooth. I would estimate that is about double what I would recommend. ”

“Remind me that we are NOT to ride that train, Richard.”

“Perhaps there is some secondary braking beyond the wheel brakes which would be insufficient on the steep grade. I will have to ask about it when I get a chance to talk to someone from the Railway Inspectorate. Possibly there are cogs under the carriages that allow for braking. I do not know, but suspect not.”

Amelia asked “To come back to our particular problems, how shall we deal with this new information? We already have had to give a rather conditional assignment of cause to Little Bytham just a month ago, since the Major has not pronounced on that.”

“True.

“I think for Snowdon, we will just add a note at the end of the

introductory chapter saying we are limiting our report to the end of March 1896, even though we are aware that there has been a fatality on the Snowdon Mountain Railway. Perhaps you can write that and ask Miss Hoskins if it would be possible to fit an extra sentence or footnote.”

That is what we did. The last page of the Introduction to our report was only half filled, so it turned out to be an easy addendum.

* * * * *

We used a conductor’s punch to put a hole in each sheet and threaded a ribbon to bind the report pages in order.

R Carr and Associates
High Street
Tunbridge Wells
April 10, 1896

Sir Joseph Pease
North Eastern Railway
York

Dear Sir Joseph,

I have pleasure in informing you that the safety review report is now complete. We are reluctant to commit it to postal delivery, and would ask that you suggest (by telegram if you wish) when I should bring the document to York. I would propose to stay over two nights, possibly in Doncaster where I could confer with GNR staff about other matters we have considered. That will allow you to peruse the report over about 24 hours, and directly question me about it.

If there are any issues needing to be addressed in the report, there will still be time within the period we agreed for this study. Furthermore, should it be desired, we will be happy to present

a summary to Railway directors or others of your choosing at a time and place to be agreed.

We thank you for granting us the opportunity to execute this study, and I remain your humble and obedient servant,

Richard Carr

* * * * *

On Tuesday April 14 I got a telegram

DELIVER 16 APRIL STOP

DISCUSS THREE PM 17 APRIL STOP

PEASE

Leaving home early on the 16th, I was able to be in York and leave the report with Pease's secretary around two o'clock. I then took a train to Doncaster and went to the Magdalen as usual. After dropping off my valise and taking a quick wash to refresh myself, I walked over to the Works and found Henry Armstrong.

"You made a successful delivery?" he asked.

"Well, to his secretary."

"I gather he had a lunch with Oakley and some others today, I suspect about our friends Mott and Wardle. Nesbitt was asked to go to answer questions if needed."

"I would think Nesbitt would prefer a quieter conversation," I suggested.

"Indeed, when I saw him last he was not well-pleased, since he had to find someone to keep an eye out for Mott and his associates. He has introduced us to Shaw and Cooper so we won't be nervous if we see those gentlemen hanging about, but if Nesbitt is away, he is short an agent. However, I believe he found someone from the Railway police who was working up in Newcastle to come down for a few days, and I know he has been giving Andy some tasks with the

pony and cart that allow for observations of activity in and about the town.”

“Has there been any progress in allowing the Petch’s to emigrate?”

“Yes. Pease himself talked to Jackson of the GNR and together they made a decision, there being some concern that Wardle might find out if there was wider discussion. I passed on via Andy that passage to Calgary would be arranged with £ 75 to get them on their feet, but £ 60 of that would be put in a bank for them in Calgary.”

“That is prudent. The cash might be a temptation to spend or a risk for theft.”

“Andy said the same thing – he said he was relieved that there wasn’t too much money to carry. Someone in the GNR office is making the bookings and will communicate with me to inform Mrs. Petch.”

“I am glad to hear it. Let us hope it is soon. I have a feeling Mott and Co. are going to try something rather soon.”

As we were talking, a messenger arrived with a fat envelope for Henry. He thanked the messenger and got a letter opener.

“Speak of the devil. It is a set of tickets for the Petch family, listing them all. Let me make sure. Yes. They are all listed.

“They are for the Beaver Line ship *Lake Superior* out of Liverpool on May 9, arriving Montreal May 20. And there are tickets for the Canadian Pacific Railway to Calgary. Ah. Here are my instructions. Yes, I am to convey the tickets to the family, and to use an enclosed warrant to withdraw £ 15 in sovereigns from our cashier and to purchase tickets to Liverpool for the 8th of May. I am to get Mrs. Petch to sign the enclosed receipt for the tickets and money and to give her the enclosed itinerary, which has names and addresses of agents in Liverpool and Montreal, as well as a guest house in Liverpool for the night of the 8th, which will be paid by the GNR. It also has the name of the bank where there will be equivalent of £ 60 in Calgary and a letter of introduction there. However, they’ll be on their own once they get that far.”

“I doubt that will be too much of a concern as long as the money is there. And unless I am mistaken, they will soon get on their feet. Petch’s death threw them into disarray, but they seem resilient and hard-working.”

“I had better let them know about the passage,” Henry said and rang a bell. A messenger came in and Henry wrote a message on a slip of paper and asked the man “Can you get a lad – no uniform, and preferably an urchin – to take this to the address on the slip?”

“Yes. Mr. Armstrong. I know a boy likes to earn a quick six-pence.”

After the messenger left, Henry said “The message says laundry to our house was unsatisfactory and Mrs. Petch should come to collect it for re-washing. It is our signal that we have some news. I’ll have to find something for her to wash. We don’t know if they are watched or not.”

* * * * *

I dined with the Armstrongs and was present around 8 o’clock when Ethel Petch knocked. She came in and was quite surprised that all was in train for her family to emigrate.

“Mr. Carr, Mr. and Mrs. Armstrong. Got to say I didn’t expect you to be able to do anything to help me and mine. Thank you sincerely. It’s going to be a bit of a rush, but we’ll be on our way on the day.”

I said “Please be cautious and perhaps do not reveal that you will be leaving. We believe Mott and others are planning to act soon. If he wants you to do anything, pretend to go along with him but let us know as soon as you are able.”

“You’re right sir. News gets about fast. Probably will only tell Mary and Andy. Kids talk too much. Pity about the furniture and stuff.”

Henry said “Perhaps leave the key to your house in an envelope for me at the ticket office of the train station when you depart. I will arrange for whatever is left to be sold and the proceeds forwarded to you. That way, there will be no sign that you are going until you leave the house. And perhaps Andy can arrange with someone at the stable to hire a cart and driver without telling them the real purpose in advance.”

“That would be much appreciated, Mr. Armstrong. If Mott gets wind of anything, he’d try and kidnap one of the littl’uns, I think.”

* * * * *

I worked with Ivatt and his associates on the morning of the 17th. They seemed pleased to have me review their calculation methods and a few sample calculations, especially as I expressed my satisfaction with their work. In the workshop, the stretching of the frames of one of the Stirling's was already in progress and a second was being dismantled preparatory to similar work. The two locomotives took almost all the space in the particular shed for this project, and the noise, smoke and dust was quite overwhelming. We poked our noses in to note the progress and retreated to the comparative peace of the engineering office.

After an early but light lunch, I gathered my valise and found the train to York, where I planned to stay this night. I was, in fact, able to leave my valise at the Royal Station Hotel before going to Pease' office nearby. Perhaps the choice – more or less by default since it was a railway hotel – was not wise. There was much noise of builders working on the new Klondyke wing, as I was told it was to be called in celebration of that far-flung gold find in northern Canada. It occurred to me that it would not be a good idea for the Petch's to get embroiled in that sort of venture. Chasing gold made many paupers, unfortunately.

When I arrived at Sir Joseph's office he was on a telephone call. I must ask Amelia if our plans in that regard are moving ahead. It was about 10 minutes before he could receive me, but I was glad to take a few minutes to gather my thoughts.

"There you are, Carr. Sorry for the delay, but it concerned some of the less savoury matters we have mentioned over the last while. Remind me to tell you about them when we have had a chance to review your report."

"Certainly. I also have some minor news on that front, so I will make sure to remind you."

"To set you at ease, I am more than satisfied with the report. It covers a lot of ground, but is readable and clear. The recommendations are strong, yet avoid detail that would cause lots of argument and fuss. However, I do have some questions, though I believe they are more an underlining of some of your comments about the scarcity of information on some topics."

We went through the report chapter by chapter, as Sir Joseph had put slips of paper between the pages where he had questions. One of these concerned one of the Rose diagrams that we had used

to present multiple risks in a single picture.

“I rather like this figure, Carr. Very informative without making the reader squint at fine print.”

“You may thank my wife Amelia, Sir Joseph. She learned such tools in her nursing training. Florence Nightingale is credited with having created them or improving them. With such devices, there is seldom a single inventor.”

“Despite the races to get patents, eh? Well, she does you credit.”

“I find she has a better feeling for how to capture information and present it. Of course, I take full responsibility for the engineering side, but I tend to defer to her in some of the communication of the ideas.”

“It must be very satisfying to share such things. Though I fear that the admission of women to the trades and professions will not be smooth. Many men have a dim view of the female sex, and many of the suffragettes are so strident in their campaign.”

“Indeed, Sir Joseph. I share your misgivings. We have been fortunate in my consultancy to be able to use ladies to carry out aspects of our work, and have found they generally outpace the men.”

“Really! In what way?”

“There is really not a competition, since the men in the firm do the engineering and set up calculations. But we have several women who carry out computations for us, and they work on a piecework basis. If they are good, they make more than a man’s wage quite easily.”

“And if not, you don’t have to pay them.”

“True, but the less able soon drop out. We have a Russian woman of middle years who organizes the calculations and does some of them. She became the main breadwinner for her family. And she engages women with children or other obligations who can only work at odd hours. But as long as the calculations are completed properly, why should we care?”

“Indeed. And does this not take work from men?”

“We tried the women when men let us down. And in the current report, Amelia has done a lot of the drafting, style, editing and proofreading, and a Miss Hoskins did the typing.”

“I actually expected to fight with handwriting, since I had forgotten your proposal said you would arrange to have the material

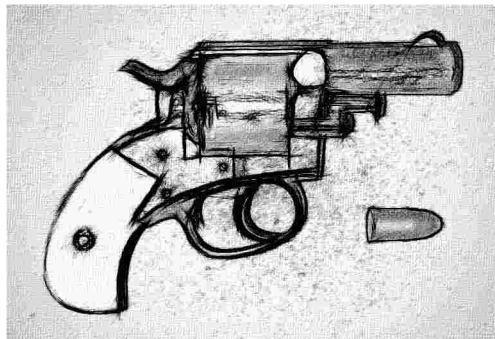
typed. The typewriter does make material much easier to read. And you must have a good typist, as I have found no errors at all. Overall, Carr, a splendid effort. I'm sorry I shall not be able to invite you to dine, but do enjoy a good meal at the Royal. You may also be able to take in some theatre this evening.

“By the way, I believe it very likely we will take up your offer to present the core of your report to some of the main men in both railways. I'll have to get my assistants to find out what dates are possible and get in touch.”

We briefly talked of the more confidential issues that were of concern. I reported on the arrangements for the Petch family. Sir Joseph told me that meetings were observed between Wardle or Mott and a number of other people with whom those persons would not usually have any business. There was still no definite information, but some rumours had been heard of valuable items being moved, but no details about what they might be.

* * * * *

Excitement and action



I did enjoy a good meal at the hotel, but eschewed trying to find a theatre ticket in favour of a short walk, a little reading of one of Henry James' novels, and an early sleep. I could have returned that night to Tunbridge Wells if I had been quick leaving Sir Joseph, but I would not have retired until midnight or later. Instead, I planned to rise early, in fact before the sun was truly up, since this would allow me to be in London well before noon.

I telegraphed Amelia to suggest she meet my train at King's Cross in London, or to reply to the hotel if she could not come, then retired early. I had my alarm clock set so I would be able to rise and shave in time for the early train. I would have to hope the Pullman could provide some refreshment for breakfast.

I was, of course, travelling First Class, since otherwise I would not have access to a toilet or refreshments while travelling. I was able to get a coffee and a bacon sandwich, which would suffice until what I hoped would be a satisfying lunch with my favourite companion. The First Class also allowed some movement within the carriage, unlike most of the Third Class compartments which had doors to the outside only.

When the train pulled into Doncaster, I was about to get out my novel when I noticed a man on the platform who looked vaguely familiar. Then I realized he was Lucas Murphy. He was holding a notebook and a large pocket watch and seemed to be checking the watch against the station clock.

I managed by craning my neck to see that he got into the carriage behind the Pullman I was in. That was a Third Class carriage, so had compartments accessed from the platform as I have noted. I would not be able to watch him nor move through the train to find him. I wondered if Nesbitt or his colleagues were about, but I didn't see them.

On the excuse of sun in my eyes, I moved seat to one facing the rear of the train. We stopped in Retford, but Murphy did not appear. He did, however, get off in Newark North Gate. I stood to see where he went, and he made for the steps to cross over to the down line. There he walked up to another man, a large fellow with a bicycle. None other than Black Davy. Just before the guard blew his whistle for my train, I saw them waiting on the down platform with the bicycle, which would have to be put in the guard's van on whatever train they took.

I needed to report this. How? I realized Cooper was probably still in London. It was worth a try. I took a page from my notebook and wrote

MURPHY WITH WATCH AND NOTEBOOK DONCASTER TO
NEWARK NORTH GATE STOP

MURPHY AND DAVY AND BICYCLE GOING NORTH FROM NEWARK STOP

ARRIVE KINGS CROSS 0945 IF YOU CAN MEET STOP

CARR

I drew a line and put the name and address in London I had been given. It was a long-odds gamble. Then I found the letter Sir Joseph had given me to order railway staff to assist me and went to find a train agent. The Pullman had service staff, and I asked one of the pair in the Pullman if I could speak to the guard or someone in authority and showed them my letter.

“e’s in the brake van at the back, so we can’t get to him,” one of them said.

“All right. Perhaps one of you can help me. My name, as the letter states, is Richard Carr and I am working on railway safety. I saw some men at the last station who I have reason to believe are planning some action against the railway, so I need to send this telegram to the address given. It is a place where telegrams can be received. If necessary I will give you money for the telegram, but usually the Railway uses their circuits. Here is my card if there is any fuss.”

“Is that letter really from Sir Joseph?”

“It is. I was with him yesterday afternoon to deliver a report and discuss some confidential matters of importance in this case. But as I said, I can give you money for the telegram if that is a concern. Will 5 shillings be enough?”

“More than enough, sir. And I have your card and will arrange for reimbursement when we verify your credentials.”

“Fair enough. How soon to Grantham? I assume we can get a station agent to take the telegram there.”

“About 4 minutes,” the man said, having pulled out a pocket watch.

Of course, I didn’t have a high expectation of Cooper or Shaw meeting me, but was pleasantly surprised to see a man holding a card with ‘R. CARR’ written on it. Looking at him, I realized it was Cooper. Photographs can be deceiving. I’m glad those of Murphy and Black Davy were good likenesses.

“Daniel Cooper, I believe?”

“Ah. Mr. Carr. I was afraid I’d miss you, since we haven’t met. Please come with me where we can talk and tell me what you

observed.”

Cooper ushered me to the concourse then to a side platform where he took a large key from his pocket and opened a door.

“Our London office for the Railway police,” he explained. There were four desks, one with a telephone, and there was just one young man who was at that desk. “I’m afraid it’s not very inspiring, but it provides a base for operations. Now tell me what you saw.”

I related everything I could remember, and Cooper wrote furiously.

“Thank you, Mr. Carr. I’m not sure what to make of it, but there is a curve just south of Retford where a derailment could be arranged, though it is a right curve for the up trains, and would likely not block the down ones.”

“You’re thinking that there’s a plan to somehow use a derailment to block the line for some reason?”

“We’re still largely in the dark, but we know something’s afoot. However, it seems that Mott’s gang is looking to do something between Newark North Gate and Doncaster from what you’ve seen, unless they know we are watching and are throwing red herrings all about.”

“Has anything been learned about Wardle?”

“He seems to meet with different people who have banking connections. But we haven’t figured out any particular reason. Let me get your information out to Nesbitt and Oakley – he’s asked to be kept informed.”

For a few minutes he printed furiously on a pad of paper, then said “Arkwright, can you get this off urgently?”

“Yes, Mr. Cooper. Can you wait here while I take it to the telegraph office?”

“Yes. I’ll be here. Will you be continuing your journey, Mr. Carr?”

“Yes. If you don’t mind, I’ll get on. Thank you for meeting me so we can get the information passed on. I’m sorry it is not more helpful.”

“Well, we don’t know that yet. It could be key to solving the case and preventing trouble.”

* * * * *

I exited the office and walked toward the front of the station. There was a newspaper stand, and I realized I had not bought one this morning, and felt in my pocket for some coin. The hesitation to do that was fortuitous, as, coming in the station were Wardle and Mott, with Wardle dressed as normal, but Mott in rather smart attire. Still, looking more closely, Mott's suit was likely one of Wardle's, for it did not fit him well.

I kept my eyes on them as I said "The Times, please," and passed money to the boy. I then moved off, the boy saying "Your change, sir!"

"Keep it!"

My movements were intended to keep the pair of suspects in sight. They were heading for one of the East Coast main line platforms. Then I realized that Amelia was waiting near the entrance to an adjacent platform, the one which I had exited from with Cooper. She must have just missed me by a minute or so, and was probably wondering whether I had arrived and moved on. Normally one of us would wait for the other. I was about to greet her, but at that moment a voice at my elbow said "Mr. Carr."

It was Shaw. I maintained my pace to follow Wardle and Mott, saying quietly, "I've just been with Cooper, as I saw Murphy and Davy at Newark North Gate, then was buying a newspaper when I saw those two. And my wife is over there."

"Can you get back to Cooper and tell him, then try to get on the train. Use the guard's van and we'll try to communicate at the first or second stop. But I will take your wife to the guard's van. The two of you can move up the train when we stop and I will move away. You will be less suspicious than I in keeping an eye on our suspects, as I fear Mott may know I am with the Railway police."

I hastily returned to the Railway police office and banged on the door. Cooper opened it and I told him what was happening and that I was going to try for the train.

"Go quickly. Arkwright's not back and I'll need to get more men involved. I'll try to join you, else see what can be arranged. At worse the next train, and perhaps make up some excuse to delay the express before it gets near Newark, where I anticipate their plan is to be executed."

I confess I have not run so fast for a while. Moreover, I still was carrying my valise. I had to yell to the ticket collector that I would

pay on the train. And the guard had blown his whistle when I ran up and said "I'm with the Railway police", which was true in that I was 'with' them, but not likely in the sense that the guard would understand. However, he let me into his compartment.

As I regained my breath, I realized Amelia was there already.

The guard said "Mr. Shaw – that was his Railway police identification at least – said you would explain the situation sir."

I explained that the Railway police suspected that there may be some attempt at a crime, possibly involving derailment of a train. I showed my letter from Pease and introduced my wife.

"Then you and your wife are not part of the Railway police, sir?"

"No, but Mr. Shaw is following two suspects. And as I have said, I observed two suspects at Newark North Gate and reported them to Mr. Cooper at King's Cross. He appears to have missed this train as he needed to establish communications with other resources. I would anticipate that the suspects and Shaw are in the Pullman. We will try to communicate with Mr. Shaw when we stop."

"Stevenage has a two minute stop. You said there's been other communication with the Railway police, sir."

"Yes. Agents at King's Cross have been notified. Cooper was going to try to join me, but no doubt in passing along information he was delayed. The other police agent had just been sent to the telegraph office with my information, and Cooper wanted to stay by the telephone. He will try to follow somehow, if necessary on the next train."

"Let me give you tickets to the Pullman. Then you can board without creating attention."

The guard filled out a ticket form. This wasn't the usual ticket, but one for use on the train. In the space for the amount of money, he put 'RP'.

"The staff in the Pullman will know you're with the Railway police. And you must be special with that letter from Sir Joseph."

"Not precisely in the fashion you may suspect. I'm an engineer and we – my wife handles the statistical diagrams and other research – have just completed a report on railway safety, but in the process we uncovered what seems to be a plot to commit some sort of mischief. I'm afraid I don't have the photographs of the suspects. The agent who was following two of them, Mr. Shaw who you met, asked me to communicate with the Railway police office at King's

Cross urgently, and we had to part company.”

In what I said, I now realize I was repeating myself in the excitement.

Amelia said “Richard. Try to calm yourself and regain your breath.”

It was only a few more minutes to Stevenage, so we made sure we were ready to step down to the platform right behind the guard, whose door opened inwards so he could have it open before the train came to a stop. We walked briskly up to the Pullman and boarded.

Wardle was in the forward facing window seat and Mott across from him in the first set of seats on the platform side of the train. Shaw was in the passage-way rear-facing seat in the pair just forward of them on the same side. It was likely the seats prevented Mott from seeing him clearly. A young woman had the corresponding forward-facing window seat and was reading a book.

There was a man in the forward-facing rearmost seat on the opposite side to Wardle with a document case on his lap. It seemed odd not to put it on the floor or in the luggage rack. There was an elderly man with a priest’s collar opposite him, also by the window.

As a couple, we would naturally be expected to find an empty seat side by side or a fully empty pair, but none were left. Where people were sitting alone in a double seat, they had placed newspapers or other objects on the empty seat to inhibit others from taking the place. Even the priest, if he were one, had placed a prayer book beside him. In any event, we wanted to present our ticket to the train agent so he would be aware of our affiliation.

“Let me just check your ticket, sir. Ah, yes. A special ticket.” In a lower voice, he whispered “Mr. Shaw said you might join us.” Then in a regular tone he said “Follow me please.”

There were only a couple of double seats available. He led us to the only one left that would give us a view of the rear of the carriage, which was on the platform side of the train and facing backwards. It was in the fourth set of seats, so there was one set between us and Shaw, two to Mott and Wardle.

“Will this be satisfactory, sir?”

The seat faced one where a solitary elderly lady looked at us as if we were intruding on her space. She was crocheting something. Since we were on the platform side, there would be seats obscuring our view of Shaw, Mott and Wardle.

“This will be fine,” I said.

Amelia said good morning to the lady, who simply nodded.

Where we were, Wardle could not see me directly. I rather hoped neither he nor Mott would remember me. As I am far-sighted, I took off my spectacles and put them in my pocket. The magnification reduces the field of vision and reduces the peripheral view, and the glasses do distort my view of far away things.

I put my valise, hat and our coats in the luggage rack, and allowed Amelia to take the seat by the window. The train was by now moving and had begun to accelerate. Amelia unpinned her hat and asked if I would put it on the rack with her raincoat. Oddly, she kept the six-inch hatpin and slid it under one of the buckles of her satchel reticule. She had got used to having this rather large bag. Since it had a modest flapped pocket on the front where she could put coins and tickets, a handkerchief and other small items, she did not have to open the main satchel every time she needed something. However, this was the first time I had seen her put a hat-pin under the buckle.

Amelia said “I am looking forward to seeing York. I have only had the opportunity of travelling through the station.”

Realizing that to be too quiet would be atypical for a married couple, I replied “Yes, my dear. This time we will have to explore a little. It is a pity we have but one night.”

As I said this, I realized that the single valise could be taken to suggest Amelia was not my lawful spouse. Indeed, the lady opposite said “Harumph. Men and their strumpets!”

In a low voice, I said “Madam, the lady beside me has been my wife for fourteen years. She is furthermore my partner in business, the execution of which is now a matter of some importance to the Railway upon which we are travelling.”

At this, the woman’s eyes widened, but before she could reply, the train man returned with coffee, cheese and biscuits, which we had not ordered. He said “Your refreshments, Mr. and Mrs. Carr. And your receipt, as requested.”

“Thank you very much.”

I looked at the so-called receipt, which was made out to look like one. However, instead of “coffee, cheese and biscuits” were the words “reinforcements joining at stops”.

I said to Amelia, tilting the ‘receipt’ towards her “This is a much

better value than I feared.”

“Yes. Definitely worth the expense,” she replied.

Amelia took out a book. I had my Times, but I had put away my spectacles. Damnation. Still, I could look at the headings of items and pretend to read. And the coffee and refreshments were surprisingly welcome.

Amelia said “Excuse me, Richard. I need to ...”

I helped her to get up and she went to the rear of the carriage where the WC was located. I saw Shaw get up and follow her through the door to the vestibule, carefully turning his face away from Mott. When Amelia returned, I said “The consequence of coffee. I must follow your example.”

Shaw was still in the carriage vestibule. He whispered “We will hopefully have more police or railway staff joining at each stop. One joined at Stevenage, but was not dressed for the Pullman so is in the baggage van two cars ahead. Others will join him, but they don’t have direct access to these carriages. I’m hoping we get at least one more man with us. So far none is armed.

“I’m sure Mott is planning something. Your wife noted that the man sitting opposite Wardle and Mott has a document case handcuffed to his wrist. His cuff shifted and she saw the cuff before he could re-position it. I had seen the case, but your wife’s observation more or less cements the argument that he is the target.”

“Amelia is more observant than I.”

“Yes. And I. Well, whatever he is carrying is no doubt what they are after. The courier will not have the key to the case nor the cuffs. But Mott will have anticipated that. They will likely just cut the chain. However, that won’t be a peaceful process, I fear.”

“Let me go into the WC, which is not unnecessary in any case, so we do not attract attention.”

“Yes. I’d better keep an eye on our suspects. I’m afraid I’m not armed, but I’m sure Cooper has asked for armed agents to join us. We don’t normally carry guns. And, unfortunately, I’ll have to see if using my handkerchief to blow my nose will be enough to keep Mott from seeing enough to remember me.”

“How will we know who the Railway agents are?”

“Our train man who brought you the refreshments will hopefully have an opportunity to communicate with us as he did with you.”

* * * * *

I returned to my seat as we slowed to stop in St Neots. I wondered in passing when the Major would release his report on the crash in Little Bytham. He had been surprisingly quick with the one that had occurred here.

In St Neots a man in military uniform joined the carriage and asked if he might take the window seat next to Shaw. He put his greatcoat on the rack, but kept a dispatch satchel by his feet. I wondered if he were part of the reinforcements.

In Peterborough, the elderly lady left the train, and her seat was taken by a young man in a grammar school uniform. The uniform did not fit him well, and I realized he was likely several years older than the disguise would imply. Looking at his hands, I realized they had callouses of someone who was a worker. His upper arms were very tight against the material of the jacket he was wearing. Moreover, on a day like today, he would normally be in school. He did not have a satchel, nor anywhere to hide a pistol that I could see, however.

* * * * *

Our train had one more stop at Grantham before we would get to Newark North Gate. I saw one or two men on the platform at Grantham who may have been Railway staff coming to support us, but nobody got in our carriage that I saw.

Nothing happened on the next leg, and we stopped in Newark North Gate. Nor was there anything apparently amiss before Retford.

The train was overdue almost 10 minutes starting out from Retford and as we finally started the train agent in our carriage announced in a loud voice “Ladies and Gentlemen. There appears to be an incident just north of Doncaster. We will be stopping in Doncaster until the situation becomes clear and arrangements can be made to continue. Please hold onto your tickets and do not surrender them, as the Railway may offer some compensation for delay.”

I saw Wardle move across the aisle and sit by the courier. He said something and handed the courier what looked like his card. I don’t read lips, but would swear the courier said something like “Thank

you, Mr. Wardle,” and Wardle resumed his seat. The courier then got up and went to the WC. Mott followed.

We were now starting to slow for Doncaster. Suddenly there were two loud bangs almost together and a man screamed. Then Mott fell through the door to the vestibule, dropping a revolver as he did so. Shaw jumped up and kicked the gun down the aisle near where I was sitting, so I went to pick it up for safe-keeping. However, the school-boy pushed me out of the way and grabbed it, though by the barrel since that was pointing towards us. It was hot from firing and he dropped the gun, and squealed “Owww!”

However, the squeal was not from the heat of the short gun barrel.

“I think you should let my husband pick up the gun,” I heard Amelia say. As I looked towards the schoolboy, I saw she had stood up and was behind him, her left arm round his neck and her right hand holding the hat pin with the point in his right ear.

“Move and I’ll push all six inches into your brain,” Amelia shouted.

The gun, though it had been fired, had fortunately not been re-cocked.

By now Shaw and another man were restraining Wardle. A third man was examining Mott, but he did not seem to be conscious. The military man had not moved. Then Shaw said “Railway Police! Please stay in your seats until we can gain full control of the situation.”

Leaving his colleague with Wardle, he ran up to us. “I don’t know this one. Is he one of Mott’s?”

The schoolboy said “I’m saying nothing. But get her off me before she kills me with that needle.”

The train agent arrived along with a uniformed Doncaster policeman. The policeman said “Ah. John Mossop. Dressed as a schoolboy. I wonder if that uniform is the same one taken from a youth found locked in a shed in Peterborough? Come on. Let’s take you down the station.”

They handcuffed him and led him away.

“Are you all right, Amelia?” I asked.

“Yes. Never finer. A little practical use of my anatomy training and my hatpin.”

I laughed, but Amelia said “Perhaps I should see if my training can benefit Mr. Mott, or anyone else who is hurt.”

Wardle had been man-handled off the train and through the win-

dow I could see he was being held by two men on the platform, one of them in uniform. Shaw was coming back on board. We walked to where Mott was still lying, with the man who had come in with Shaw feeling for a pulse. There was a strange chemical smell and some liquid on the floor that was not blood.

Amelia said "I am a trained nurse. May I be of assistance?"

"Afraid he's gone, Madam," said the man. "He recognized me as a Railway policeman from past encounters and he raised his gun to fire, but I got him first. Still felt his bullet whiz by my ear, though."

Shaw came back into the carriage and announced in a loud voice "Everyone in this carriage must stay on board until we have identified you and taken your name and address. We must ensure there are no more members of the criminal gang still here, and we will ask that you submit to a search for armaments. Anyone who does not wish to be searched will be made to wait for a later train to ensure the safety of the rest of the passengers, but you will still need to identify yourself and provide some proof of identity before you are allowed to proceed."

The military man seemed upset. "I say, that seems to go beyond the law. Englishmen should not have to submit to arbitrary questioning."

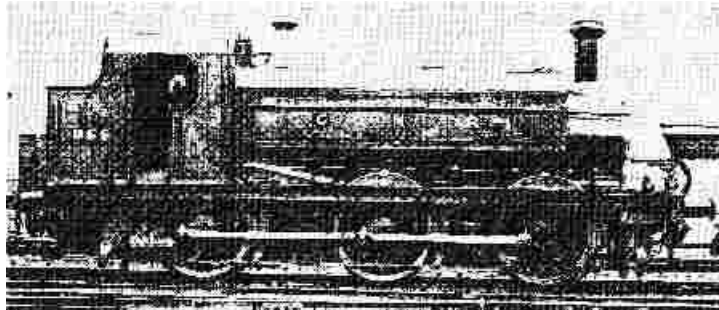
Shaw said "The railway carriage is not a public place, sir. We will not insist on searching passengers, but reserve the right to not convey them, or to convey them at our discretion. We do, as you can understand, have to protect others, and you have seen that we did not anticipate the man dressed as a schoolboy. Furthermore, even if we choose not to search you, the constabulary may seek a magistrate for permission, and detain you until the magistrate rules."

This masterfully omitted the likely delay until Monday for a magistrate to hold court, since proceedings would likely be finished already for this Friday, for it was now early afternoon.

The military man mumbled an acknowledgement, then said to Amelia "That was a fine counterattack, madam. Could use a few soldiers like you under my command."

Amelia just smiled as Shaw continued "We will endeavour to complete the necessary formalities as soon as possible, though this train will be taken out of service so that it can be thoroughly searched for any evidence and then cleaned. Another train is being prepared, though it may not have the full range of facilities."

* * * * *



It took about an hour for the Railway and local police to get all the names and addresses of people who were on the train and hence potential witnesses. They went methodically through the train, starting with our carriage since it was where the main action had taken place. As each person or couple completed their identification and preliminary statement and was checked for armaments, they were asked to exit the carriage and consult with a station agent about onward travel.

We were almost the first to be interviewed, and Nesbitt was the man doing the paperwork.

“Identification is no problem, Mr. and Mrs. Carr. And if I may, I’ll give you some paper on which to write a statement. Mr. Oakley is outside and wants to talk to you. I’ll arrange to collect your statements later. Just leave word with one of Mr. Oakley’s assistants as to your whereabouts tonight and tomorrow.”

As we were leaving the carriage, Amelia said in a low voice “They need women police officers. Any woman could conceal a small cannon under her skirts.”

Oakley was talking with Shaw and another man when we stepped down from the carriage. He waved us over to him.

“Mr. and Mrs. Carr. Thank you for your services today. Mr. Carr for spotting the suspects and setting the trap in motion and Mrs. Carr for her quick actions to apprehend one of the miscreants, who indeed we did not know of in advance.”

“Do we know exactly what happened?” I asked.

Nesbitt said “When the delay was announced, Wardle told the courier some cock and bull story that he was associated with the bankers and knew the courier’s assignment and was a secret guard for the valuables. He told the courier to use the WC so they could,

if necessary, hire conveyance onward without delay, as there would be competition for transport.

The courier did as he was told, but of course Mott was going to follow him and push into the WC to chloroform the courier and cut the chain. He had a fairly good special cutting tool in his pocket.”

Amelia said “I knew I had smelled that chemical before. Chloroform.”

“Yes. Mrs. Carr. The bottle either broke or spilled when Mott collapsed. He nearly got in the WC – had his foot in the door – then McMann came into the vestibule, Mott recognized him and fired, but missed, and McMann fired and didn’t. Mott stumbled back into the Pullman. The rest you know.”

“But where is the courier?”

“The Doncaster police have taken him to the police station. They – and we – want to make sure he isn’t part of the plot.”

“What happened with Murphy and Black Davy?”

Oakley said “They went to the Petch house. Murphy was going to stay there with Mrs. Heap and the children while Davy took Mrs. Petch and Andy Heap in the pony cart and have them place explosives on the main line just north of the Don River. They wanted to cause a disruption that would force people off the train. The plan, as Nesbitt related, was to chloroform the courier, tie and gag him, and lock him in the WC just before the train stopped in Doncaster while the track was cleared or detours arranged. If the train were stopped in a station, the WC would be locked, normally by train agents. They probably thought that any agent finding a locked WC would think one of his colleagues did so.

“They intended to escape, as far as we can determine, to Hull on the Humberside line, which would still be open since it branches off early.”

“And did they succeed in damaging the track?”

“No. Nesbitt and a couple of other men were watching for them after your message to Cooper and his report to us. We arranged a couple of our younger staff to wear poorer clothing and they served to watch and also to run messages, so we followed Davy and his two coerced assistants. Mind you, he had a couple of pretty dangerous bombs. They employed a track detonator attached to a fuse for three sticks of dynamite. The plan was to let a train knock out two bits of rail, one either side of a track. But with Cooper’s report, I

got Jack Brown's track men on a J15 shunting locomotive and sent it off towards York as the train that would blow the line. Except, of course, they were watching for trouble and had men hanging off the engine on all sides, and it was running at only a few miles per hour so they could stop quickly. But in the event, as soon as Davy prodded Mrs. Petch and Andy to go and place the explosives, Nesbitt showed him the business end of a shotgun. He gave up without a fight. And then the J15 came up and was able to bring them all back."

"Davy might have been better to place the devices himself," I said.

"I think they wanted a scapegoat who could take the blame, especially if there were fatalities. That would be a hanging offence. Anyway, we had a telegraphist on the locomotive and he climbed a pole to tell Doncaster Station that Davy was apprehended and they were returning on the down line in the locomotive."

"What about Murphy and Mrs. Heap and the children?" Amelia asked.

"We were almost certain Murphy had a pistol, and that turned out to be correct. So we needed someone who could get inside and stop him. Nesbitt had asked if he could use Armstrong's house as his working headquarters, and after he let the Armstrongs and the extra men he'd brought know what was happening, he went off to catch up to Davy and the boys he had following them. When Armstrong and the Railway police were talking about what to do, Mrs. Armstrong reminded Henry that she had been taught to shoot all kinds of firearms when growing up on a farm, and was quite a good shot. She put on some of her maid's clothing and took a bundle of laundry with a pistol in it as if she wanted some washing done. When she called out to Mrs Heap or Mrs Petch that she had some items needing urgent washing, Murphy turned to look out the window. However, Mrs. Heap had been making bacon sandwiches in a cast iron frypan. You could say she made a sandwich of the bacon between the frypan and Murphy's head. He was out cold for about 20 minutes and when he came round was screaming from the burns. Some of his scalp was cooked to the pan, even."

"So everyone is all right – except Mott and Murphy of course. Though if the Petch's have to testify in court, they'll miss their steamship."

"Yes, possibly. It will depend on whether we get confessions, and

for what crimes.

“Before I forget, Sir Joseph has reserved a suite for you in the Royal in York at Railway expense. You are asked to join him and Lady Pease for dinner at eight. I talked to him on the phone not ten minutes ago. Sir Joseph specifically said he would not be dressing for dinner. Moreover, as he recognizes that Mrs. Carr will not have planned to be away from home and she likely has only the clothing she is wearing, you are to shop when you get to York for necessary items and submit the receipts with your invoice.”

Amelia said “Well, we pretended on the train that we were going to York, so let us do so. Is there a train soon?”

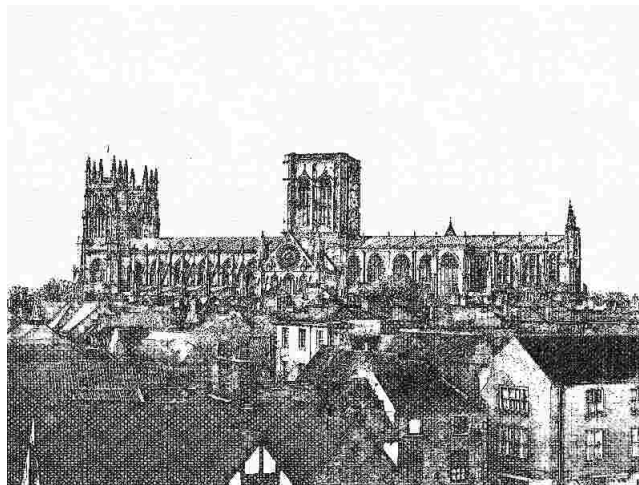
“The reconstituted express will be a while yet being prepared, but there is a local in a few minutes. Do you have a ticket already?”

“I have the ticket the guard gave us on the train out of King’s Cross.”

“That should be fine. If not, tell the ticket agent he will hear from me,” Oakley concluded.

* * * * *

York



We found a cab in York and asked him to take us to a shop or shops where Amelia could buy a blouse, a nightgown and some underthings. Our driver was knowledgeable, and took us to a street

where there were several shops of a modest nature. In one shop, Amelia purchased a simple cotton nightgown, a shift, two pairs of drawers and the same of stockings. I commented "This was not quite the shopping trip we had in mind."

"I agree, Richard, but it has been ... different." Her manner led me to wonder if Amelia did not enjoy excitement.

After putting our purchases in the cab, which we had agreed to retain until we were delivered to the hotel so we could leave our coats and my valise in it, we went in another shop that had a striking blue dress in the window. Amelia asked if they had any white blouses, and the shop lady – it seemed to be the proprietor – was quick to say "Certainly, madam. Silk or cotton?"

"Can I see one or two of each?"

"Of course. Here is one in silk we have made for us by a pair of local seamstresses. And here are some cotton ones manufactured near Manchester. They are of good quality, but of course, not in the same class as the silk."

"I'm afraid we will not be able to afford the time for alterations," I said. "We need the items immediately as we got involved in an apprehended robbery on the Railway and will not be able to get home tonight as we had planned."

"Oh my. Well, there is a fitting room behind. Will your adventure be in the newspapers?"

"I expect so. However, we are caught without luggage, having been detoured by events."

Amelia had been holding up different blouses in front of herself and looking in the mirror. She said "Richard, look after my bag, and I will try these on."

There was a chair, so I sat down while Amelia and the proprietress of the shop went into the fitting room. I heard her say "Oh. That fits very nicely." Then a little later "This cotton one is actually a very good fit. Do you have another?"

The proprietress came and found a mate to the garment in question and Amelia found that it fitted well also. She decided, given that they suited her, to buy all three.

I said "It is a pity Sir Joseph said we would not dress for dinner. I don't have my dinner suit anyway, but it would be a great pleasure if you had a proper dress."

"Richard. That sounds like you have a scheme afoot."

“Well, I saw you eyeing the dress in the window. It may be improbable that it fits, but perhaps we should ask about it.”

The shop lady said “Nothing ventured ... ” and opened the door to the display window. It took her a couple of minutes to unhook the dress from the form on which it was displayed, then she led Amelia to the fitting room.

After a couple of minutes, the shop lady said “Well I never!”

Amelia said excitedly “Richard! Come and see.”

I went through and Amelia was in the bright blue dress and it fitted her perfectly.

“Pity about your shoes madam.”

“Yes. They are intended for walking, not for dinner.”

“Let me write a note to my colleague three shops down and have your husband take it there with a cardboard outline of your foot. I saw a pair of ball-slippers there last week.”

Quickly she took a piece of cardboard and had Amelia put her foot on it and ran a pencil around. Then she wrote “sky blue ball-slippers” on it and gave it to me, saying, “Mrs. Crown, fourth shop down on the left.”

I left the shop and went to the shoe shop, hoping it would not be closed. It was now after five o’ clock, and I did not know the local customary hours. However, they were still open and I found Mrs. Crown with a customer, but she excused herself when she saw I had the card in my hand. I explained the situation, and she shouted “Jenny, come here and give a hand.”

A young girl emerged from the back, and Mrs. Crown said “See what we have in the blue slippers and select three or four that are close to the size on this card and go with this gentleman to Mrs. Bell’s.”

That is what happened. Just one of the pairs was a decent fit, but fortunately they were a colour that was well suited to the dress. The slippers were actually a much lighter blue, but that seemed to accent the shimmering deep blue of the dress.

While Mrs. Bell wrote up the bill for the dress and blouses, I returned with Jenny and purchased the slippers. Next to Mrs. Crown’s footwear was a gentlemen’s apparel shop. On a whim I went in and found a simple white shirt with two pairs of cuffs and collars and a vest and underpants. I had not intended to be away more than two nights.

I was more than satisfied with our driver, and asked if he wished to collect us at ten minutes to eight to carry us to the address we had been given for Sir Joseph's house. The driver said "Are you dining with Sir Joseph?", even though I had not said that was the name of the owner of the house, to which I assented. He said "It is a little out of the center, so perhaps I should collect you at a quarter to eight."

It was about half-past six before we were in our room at the Royal, though the "room" turned out to be a suite. Nesbitt had left a telegram asking us to meet him in the hotel for breakfast at a quarter past eight so he could take our formal statements. We had started to write them during the short journey from Doncaster to York. We might have to rise early to complete them, but it would suit us to deliver them in the morning rather than having to interrupt our day later on.

There was a bathroom with a fine tub in our suite. As soon as we had closed the door on the bellboy who brought in our packages, including the dress which was on a hanger but wrapped in brown paper that was pinned carefully to protect the garment, Amelia said, simply "Bath!"

I hung up the dress and put the other packages on chairs and began to undress, but Amelia was quicker and I saw a naked backside disappear into the bathroom and heard the water running. I soon joined Amelia, with her sitting in front.

"Oh, I need this bath to get rid of the sweat from running around," I said.

"Yes, I do too."

We washed ourselves quite vigorously. I was preparing to settle back for a period of soaking when Amelia said "Richard, I'm not sure how to express myself."

"In what way?"

"For some reason, the excitement of today has rendered me Oh I think the rude word is randy."

I had not ever heard Amelia use this word, though I knew her to have a robust appetite for physical pleasure. And indeed, the excitement of the day did lend itself to such feelings.

"I cannot deny that the day does lean me in a similar direction."

Without more words, Amelia passed me a wet flannel and took one herself and was washing between her legs. I assumed she wished

me to do likewise. In two minutes we were drying ourselves. In three, we were lying on a towel on the bed, and I will leave to your imagination how we each pleased the other. When we had both spent, I looked at my alarm clock, which I had, as a matter of habit for I do not remember doing so, placed beside the bed. It was just 5 past seven.

“Does that feel better?” I asked.

“Much. I think that the stress of the day needed some relief. Now let us dress. You may have to help me, though the fastenings are at the side.”

We each put on our new items, though I still wore my day suit. In fact, I had put on the spare trousers only this morning, though I had trouble forcing myself to realize that I had risen only about 13 hours before in this very hotel.

When Amelia had on all her undergarments I helped lift the new dress over her head. There were hooks under the left arm down to the waist, and there was a belt that covered the more substantial fastening there. However, it was not a difficult dress to don. Amelia already had on new stockings.

“Should I wear my regular shoes in case there is rain or dirt? I could put the new ones in my satchel, and you may keep my money in your pocket.”

“That is a good idea. Now do you propose to keep your hair up?” I asked.

“Is it half down from our ... er ... ”

“entertainment?” I suggested.

“Yes, we could say that. Oh no. I forgot my comb.”

“Can you use mine?”

“I’ll have to. And share your toothbrush.”

Amelia combed her hair, which fortunately she keeps at a length that it looks attractive without too much attention. She had some ribbons in her satchel which I helped her tie. By great fortune they were navy blue. We both brushed our teeth – it had been a longish day and it was good to refresh the mouth.

“It is twenty to eight,” I said.

“Let us go down. Pass me my coat. I won’t wear my hat, but if I need it there is a headscarf in my satchel with the shoes.”

I held Amelia’s coat so she could put it on more easily, then I donned my own and picked up my hat.

Sir Joseph's butler – I knew his name was Ramsey from the confidential communications – took our coats and other things and led Amelia to a cloakroom where she could change to her new shoes, then conveyed us to the drawing room, where Sir Joseph and Lady Pease were drinking sherry.

“Right on time. My dear, this is Richard Carr and his wife Amelia whose story I've related to you. Richard, Amelia, this is my wife Mary, the mother of our eight children.”

“My goodness, Lady Pease, that is a fair innings. I was a nurse and midwife before I married Richard. Indeed, I nursed his late wife and about a year and a half after she died we met out walking.”

“And then you found that you enjoyed each other's company?” Lady Pease asked.

“Very much so,” I said. “We took some time to recognize that details of life history and difference in age should not get in the way of genuine affection, and I believe we have been very happy.”

“May I offer you some sherry?” Pease asked.

“You should offer them the Glenfiddich, Joseph. Neat, I believe.”

Amelia and I both turned to look quizzically at each other and then Lady Mary, who laughed uproariously. Then she said “A friend was on the Express to Edinburgh last All Hallows Eve and her companion knew Mr. Carr. She related to me how you nonplussed the waiter by insisting, I believe, that you would have your whiskey undiluted and that you used the whiskey to toast husband and wife as the love of each other's life. My friend and her companion raised their glasses to salute you, which you may remember.”

Now we all laughed as Amelia and I nodded through our laughter that we did remember. Then Sir Joseph said “There is certainly Glenfiddich available. Would you prefer that?”

Amelia said “A very small measure, please. I like the spicity aroma and a little taste, but have no stomach for very much.”

“A similar small measure for me, Sir Joseph. Amelia has described how I also enjoy it. But like her, I find a little is enough.”

Sir Joseph said “I must say that I was very taken, Mrs. Carr, by the Lines and Rose diagrams you used in your report. They make numbers almost come alive.”

“Thank you, Sir Joseph,” Amelia said. “Many people are afraid of numbers, so we must try to make them more than squiggles on a page.”

“How do you do this?” Lady Mary asked.

“Let me explain first the Lines diagrams, or at least my version thereof,” Amelia said. “Richard. Do you have your notebook?”

Of course, I had my trusty notebook in my jacket pocket. I took it and a pencil out and Amelia turned to a blank page. There was a small table, not too low, upon which we could put our glasses. Amelia moved her chair closer to that of Lady Mary and said “I will let the Sir Joseph look over my shoulder, and Richard knows the workings already.”

“Let me put my spectacles on,” Lady Mary said, reaching for a small reticule.

Amelia wrote some numbers on the top of the blank page. “Suppose these are some figures for the breaking strength of a rail. We note that they range from 80 to 240 in some units, say hundred-weight, so eight to 24 tons. I don’t know if that is reasonable.”

“Is that reasonable, Carr?” Sir Joseph asked.

“Probably it would be correct a quarter-century ago, but now we have some heavier rails. But it is of the right scale.”

Amelia continued, “Suppose – and this can be revised if needed – we suggest using a scale – a ruler if you like – with intervals marked starting at 80, 100, 120, and so on, up to 240, and put those levels each on a line of the ruled paper. We draw a vertical to separate that set of values from the data we now record. Then we read the numbers and put an X on the appropriate line whenever a number falls in the appropriate interval. Some workers suggest putting some digits there, which works well if the intervals are like 10, 20, 30, since then one can use a 3 in the place of an X on the 20 line if the figure is 23.”

Lady Mary said “It is not so difficult. And what does it let you see?”

“The lowest and greatest numbers are easy to see, and the pattern of the figures. For example, if we had nearly all the numbers near 220 or 240 with but a singleton at 80, we would worry that there could be abnormally weak rails somewhere. Or one might use different letters for different suppliers of rails to get an idea of differences in quality.”

“Now I see a real use. That could let us catch some inferior goods, or rather inferior suppliers,” Sir Joseph said.

“Do you want me to explain the Rose Diagram too,” Amelia

asked.

“Perhaps just in general terms,” Sir Joseph advised.

“Well, it is a way to allow comparisons. Florence Nightingale used it to characterize different causes of death. You think of a wheel, with fat spokes. Each spoke is a category such as battle, accident, cholera, frozen, and so on. The spoke is extended until its area gives the value such as number of deaths.”

Amelia sketched the idea on the paper as she talked. “Miss Nightingale then extended the concept by putting sub-areas in the spokes that were divisions of the deaths by months when they occurred so one could see when different causes were important. This let her argue that epidemics and bad hygiene were the major costs in lives, rather than the enemy.”

“Well done, Mrs. Carr,” Lady Mary said. “You have shown me that there are ways to keep numbers from frightening me.”

At this point the butler entered and said “Dinner is served” and we moved to a well-appointed dining room.

Lady Mary said “The table is too large for four, so I have seated us two to a side at one end, with the ladies on their gentleman’s right, because the lady is always right, is she not, Mrs. Carr? And the men cannot then dive into their engineering and leave us out without talking across us.”

“Well, my dear, I hope you won’t think it ‘engineering’ if I enquire about the shopping expedition, since Mrs. Carr was rather press-ganged at King’s Cross and had no nightgown. So tell us what you were able to acquire.”

“I found a nightgown and some stockings and underthings,” Amelia said.

“Well, the bills should be added to your invoice.”

“Including those for that wonderful dress and shoes,” Lady Mary added. “But Joseph will only reimburse you if you include the names of the merchants so I can take my daughters there.”

Sir Joseph said “Of course! You could not have had that dress with you when you apprehended the young thug. Oakley said on the telephone that you used a hat pin. Let us start our soup, and you must tell us what happened.”

Our meal, which was excellent, thus was punctuated by different aspects of the day that preceded it. By ten o’ clock, however, we were starting to flag. We had by then finished the pudding and the

cheese, and had declined coffee as it might keep us awake.

“Joseph, I think it is time to let our guests and ourselves get some sleep. Ring for Ramsey and have him arrange a cab.”

I was rather surprised to find the same driver we’d had to bring us waiting outside when we completed our thanks and farewells at a quarter past 10.

“Lady Mary is well-known to keep to a schedule, sir. Dinners start with drinks at 8, into the dining room at half past, and all done around 10 to get people out the door by quarter past. I just made sure my other fares were done by five to 10 and here I am.”

“That is much appreciated. It is always awkward to be waiting to say goodbye.”

* * * * *

The next morning Nesbitt joined us for breakfast, then we went to our suite to finish and sign our statements. Amelia said “If you don’t mind, I’ll make a copy in case we must appear in court. We don’t want the lawyers tripping us up on details that nobody can remember.”

“Very wise, Mrs. Carr.”

After we had done this, I asked Nesbitt “Are the Petch’s really all right?”

“Yes, though I’ve got a couple of men who are taking turns there in case Mott still has some associate to try to hurt them. We’re hoping that we get confessions so the family doesn’t have to stay for a trial. Wardle’s already talking. Murphy has confessed in part from a hospital bed. There’s may be a couple of people still to be picked up. Davy has admitted to some things, but we’re pretty certain there’s more. We’re trying to get one or more to shop the others.

“There are some characters still to identify. Someone must have been passing information on what and when would be couriered. Wardle has been quiet so far about that. And there is probably another odd-job man for Mott like Mossop. But odd-jobs for Mott included hurting people. However, we have heard Mott promised someone some money, though now Mott is dead, where and what funds Mott left are open to speculation. We don’t know if someone will tell tales about what was going on to gain favour with the

police, blaming Mott for any crimes, since he can't answer. And they may have agreed to do something, but we'd need evidence of actual actions to convict them. They could just pocket whatever Mott paid them so far and smile."

After Nesbitt had departed it was nearly 10 o' clock. We soon followed out of the hotel and spent a day as tourists. We did visit a shop that sold leather and canvas goods and bought a canvas bag with handles in which to put Amelia's new dress and other things. I gave the shopkeeper sixpence to have someone trustworthy deliver it to the hotel rather than interrupt our perambulations on the walls of the city and through the Minster.

We had a light lunch in a tea room. Just a sandwich and chocolate éclair each. By five our feet were sore and we adjourned to the tub, this time for the better part of an hour. We had planned to seek a restaurant in the town, but instead took the lazy option and ate in the hotel. This was hardly a sacrifice, as there was an excellent menu and the chef executed it well.

With Sir Joseph and Lady Pease we had had beef for the main course. Tonight I chose pheasant, while Amelia had a lamb curry. We each sampled the other's dish and approved. Given that neither of us needs to eat as much as the fancier restaurants often serve, we did not have a soup nor hors d'oeuvre, but did succumb to the temptation of a raspberry sorbet in a chocolate bowl and a treacle tart with clotted cream for dessert. We shared these, as neither of us could decide which we wanted most.

The bottle of hock we consumed during the meal meant we fell asleep very quickly.

* * * * *

Home again



We had telegraphed home to let them know of our travels, and Betty was there when we arrived in the early evening of Sunday the 19th. We had taken a mid-morning train from York, then put our bags such as they were in Left Luggage at Charing Cross after taking a hansom from King's Cross. We found a teashop for a sandwich, then crossed Trafalgar Square and spent a couple of hours in the National Gallery enjoying the paintings before catching our train home.

Betty, as Amelia told me later, oohed and aahed over the dress, shoes and the silk blouse, and asked what brand were the cotton ones. As is mostly the case with men's apparel, there were no comments on my new shirt and underwear.

Cook had made some leek and potato soup and there was fresh bread to have with cheese if we were hungry. We ate in the office and went through the post and toyed with organizing our receipts and some other tasks before retiring rather early. The excitement had tired us, despite the small unplanned holiday we had taken in

York.

* * * * *

The Times, in its Monday morning edition, had a mention of the arrests and the death of a criminal in an attempted robbery of negotiable bonds from a courier on the East Coast Express on Friday. However, the story was far from complete. Our names were not mentioned, for which we were grateful. There was always the possibility that there were still members of Mott's gang at liberty and they might seek some sort of vengeance, even though it is not obvious what advantage any action against those of us who played a part in stopping the robbery would be.

Amelia decided to have a day at home on Monday. She was going to talk with Rickett about the garden. Both Amelia and I were sporadic gardeners, so it was good that Rickett was paid to keep things going. Actually Betty had a small plot where she grew a few herbs and small vegetables, and cook had asked Rickett to put in tomatoes, lettuces, radishes, carrots, peas and runner beans, and she exercises a proprietary care over the beds with these items. In fact, most of the back garden was vegetables, with a small patch of wild flowers, and gravel paths to allow access to and between the beds. Thus the French windows gave upon a view of a miniature market garden, though our usual access was via the scullery door and through a modest entrance chamber where we stored garden tools and which had a WC on one side. The garden was walled, but because our house was the end one of the row, and indeed bigger than the rest in the row by having a full third storey, there was an irregular piece of land between the house and the boundary of Calverly Park Grounds. There was a high wall, a bit over six feet at the top, extending the front wall of the house that enclosed this irregular part of the back garden, and it had a keyed door to which there was a side path off the front doorway path. This was most helpful since we could provide Rickett with a key and he need not come through the house to work in the vegetable garden. Against the inside of the high wall, I had had Rickett build a modest lean-to roof, under which we could store our bicycles in the dry. Early in our tenure of the house, I had arranged that there was a water tap and drain beside the back entrance. That was fairly easily accomplished,

since the WC had water and drain on the inside of the wall.

The front garden was bordered by a low wall and the paths to the front door and the keyed high gate to the rear. Some houses had a patch of grass here, and Geraldine and I had for a time attempted this, but it was an exercise in futility. The small area required a lot of work and was not big enough for any sensible purpose. Soon after Amelia came to live in the house, we had Rickett build a set of terraced beds for a variety of flowers and decorative plants, with gravel divisions to ease the task of controlling weeds. The result was a colourful but easily maintained introduction to our residence.

This day, however, Amelia was planning to discuss vegetables with Rickett and Betty, no doubt with cook supervising, and they would do some planting, weeding and pruning.

Meanwhile, after breakfast, I walked to our High Street offices. There were some other commissions our firm was carrying out, and while Roger Parks and Victor Crane could each handle them on their own – indeed, I would be confident that I could leave them to Gus to execute satisfactorily – I have encouraged a team approach. The extra eyes helped to avoid errors, though I was often surprised how very, very few true errors I noted. Perhaps it was that the additional review allowed minor touches that gave our reports better finish.

Thus I passes a quiet morning looking over what had been done, though of course my colleagues plied me with questions when we took a break for some tea at 11.

* * * * *

Doncaster
April 27, 1896

Richard Carr & Associates
High Street
Tunbridge Wells

Dear Richard, Amelia and Co.,

This is to bring you up to date on consequences of the attempted robbery just over a week ago.

Firstly, it appears there will be only a short trial for the various accused, as they have all confessed to some crime or other, though with Mott's death, not necessarily that of the principal robbery. Rather Mossop, who Amelia dealt with so effectively, will likely go down just for the assault, confinement and robbery of the schoolboy from whom he took the uniform.

Black Davy, whose real name is David Malanowski, though he was born in Birmingham, has confessed to charges of menacing and theft and possession of explosives. Murphy will confess to menacing and forcible confinement, but his burns from the hot frying pan are not healing properly, and have become infected, so it is not clear he will be fit to stand trial, if he is still alive by then. Anna is only glad she was not called upon to use the pistol given to her.

Wardle will be charged with several offences, and has confessed to his role in planning the robbery. However, he has not given up the name of the informant who told the gang information about the courier.

The magistrate has accepted that the sworn statements of the Petch family -- even the children were interviewed but the statements probably are not admissible -- will be acceptable to the court, and they are free to emigrate as planned.

Nesbitt says either he or Shaw will arrange to come to Tunbridge Wells to get a statement from Hilda so that the dossier is complete, but he will contact you directly concerning time and date.

It has been a time of some upheaval, and we are all glad it has concluded well.

Yours sincerely,

Henry Armstrong.

* * * * *

On May 1, we received our first written response to the safety review, and it was highly pleasing to us.

Doncaster Works
April 28, 1896

Richard Carr & Associates
High Street
Tunbridge Wells

Dear Mr. Carr,

Sir Joseph passed your report on to me with a most favourable recommendation, and after reading it I wholeheartedly concur. Hence we wish to take up the suggestion that you present a summary of the content of the report to a few of the engineers and managers of the GNR/NER group.

Would Thursday, May 21 be convenient at half past 1 o'clock for an hour presentation followed by at most an hour of questions which I will offer to moderate, after which there will be refreshments. We will use the GNR boardroom at King's Cross.

Sir Joseph was most insistent that he would like Mrs. Carr to be present, as he found her explanation of the statistical diagrams to be exceptionally clear and to our general benefit. Moreover, if it is feasible, we believe that large versions of those diagrams would be helpful to the exposition. Please let us know if you will be able to present such diagrams with your discourse when you reply.

Enclosed you will find two copies of an agreement for your engagement for this presentation. Because we realize you will have to prepare yourselves and materials, we are proposing a fixed sum, which we trust will be acceptable and that you can return a signed copy.

Again, our congratulations on a highly competent effort.

Yours sincerely,

Oakley

The fixed fee was generous, and was intended to pay for our time, materials and travel to the meeting. After showing Amelia and getting her consent, I replied right away.

* * * * *

High Street
Tunbridge Wells
May 1, 1986

Sir Henry Oakley
Great Northern Railway
King's Cross
London

Dear Sir Henry,

Thank you for your kind comments about our safety review report. We will be happy to present a summary of the contents and answer questions in the manner you suggest on May 21. Mrs. Carr will be able to present and/or respond to questions about the statistical diagrams, which we will transcribe to cardstock of hopefully 2 feet

by 3 in approximate dimension. May we ask that an easel be provided on which we can place the diagrams for viewing during the discourse? I believe there are easels used for special announcements at King's Cross station that would serve our needs.

The signed agreement is enclosed.

We look forward to the 21st.

Your humble and obedient servants,

Richard Carr and Associates.

Later in the afternoon, we enjoyed our customary tea, this day accompanied by some rather marvellous cheeses puffs for which cook had recently discovered the secret of baking. Amelia said "How do you think we should transfer the diagrams to cardstock as has been requested?"

"One way would be to take a photograph and use a magic lantern, though I fear we will need to find both suitable camera and lantern," I answered.

"We would have to carefully mark the card where the image showed. Not a difficult task, but possibly very tedious."

"Do you think Miss Hoskins might have skills in that direction?" I queried.

"We can but ask. Richard. Why do you not write a note that we can deliver in an evening walk? She may even be there and we will avoid delaying another day. After all, we have only three weeks from yesterday, and have not yet determined what sizes of card are available, nor how to carry the resulting placards to our presentation."

* * * * *

We ate a light meal quite early and set out around six o'clock for High Brooms, a walk of close to two miles. When we knocked on her door, Miss Hoskins seemed flustered when she opened it, but invited us in. Her mother was dozing in an armchair in the tiny living room, and hardly acknowledged us.

"I'm afraid my mother is poorly, and unlikely to get much better," Miss Hoskins said.

"I'm very sorry to hear that, Miss Hoskins. We will be brief," I responded.

"Go on, please, though I could offer you some tea."

"I think best that we don't put you to the trouble, as we were thinking of stopping at the Rose and Crown on our way home for a small drink." In this I was extemporising, but I really did not want to cause the poor woman more labour. "Our visit is because the Railways are very pleased with our report that you typed and want us to give a presentation to some of their engineers and managers. However, they would like to be able to see some of the figures. We wondered if you have any expertise in preparing such items. Our thoughts were to use Bristol board. We have asked that an easel be available to us."

"It is out of my usual work for Mrs. Westlake, and in fact my agreement with her says that I will only accept commissions for typing and shorthand through her company, but I used to do a great deal of drawing and even some calligraphy. When is the presentation to be?"

"May 21 in the afternoon. At King's Cross," Amelia said.

"It is quite soon, but I have not had a lot of work from Mrs. Westlake lately. How would I be paid?"

"Given that we are doing something that is more or less experimental for us and likely for you, would it not be best to pay you by the hour?"

"It would save a lot of concern if we spend time considering the layout and style, and I believe that will be necessary to achieve a pleasing result. What would be the rate?"

"I understand that, for example, telephone operators are paid between 8 and 12 shillings per week. This is a short engagement, so we should double that. I also believe that the kind of work will not be possible for more than eight hours per day, so a 40 hour week. Rounding up gives, say eightpence an hour. Would that be

acceptable?”

“Indeed, I would be happy with that, assuming there is at least a week of work.”

“Then let us say there will be a minimum of 40 hours. And we will pay you directly at the end of each week for the time spent in that week. I will ask that you keep a time-sheet to present to us.”

“When should I start?”

“Would it be too much an imposition for you to come tomorrow morning – I know it is Saturday – to help us shop for materials, Hopefully stationers apart from Smiths will be open. I imagine we will want some India ink and suitable nibs, and perhaps some crayons.”

“Yes. Shall I come for nine o’clock to the High Street offices?”

“Please.”

Amelia asked “May I be rude and ask what percentage of the word rate does Mrs. Westlake pay you?”

“It is about 40 percent, but all the re-typing is at our own cost, and we sometimes must pay a wasted-paper charge.”

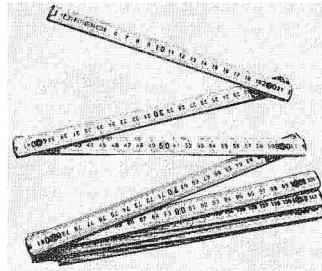
I said “My goodness, I should start a stenographic agency. Well, I am glad our task will remunerate you directly.”

“After I trained as a typewriter – now the word typist is beginning to be used – I was able to purchase my typewriter and thought to establish my own business. However, I do not have the contacts to get the work, so I use Mrs. Westlake, though I think I am the only one with my own machine.”

We left as soon as we could, and walked back to the Grosvenor Road, where the Rose and Crown was just a bit out of our way. Mentioning it to Miss Hoskins had been, as I indicated, an untruth, but one Amelia now held me to. The establishment was able to provide a pleasant port for Amelia and a half-pint of lager for me. Given our walk and our light evening meal, we indulged in a Scotch egg each before making our way home in the deepening dusk.

* * * * *

Drafting and construction



When we got to the High Street the next morning, we found Miss Hoskins had arrived early. However, this seemed to be welcome to Victor Crane, who had insisted on offering her a cup of tea and a buttered toasted muffin with some Dundee marmalade. When we entered, it was clear they had been enjoying a merry conversation, and both seemed mildly awkward on being so discovered, though they were separated by the width of the office work-table and were both respectably attired.

Smiths turned out to have a suitable Bristol board. Miss Hoskins made our task easy by asking immediately if they had the Imperial size, which we learned was 22 inches by 30 and 1/4 and most suitable to our needs. She also quickly selected two each of three widths of pen nibs and a quite large bottle of India ink. We already had a number of straight pens to hold the nibs.

Miss Hoskins asked “Do you think you will want to colour the diagrams or other presentation sheets?”

“It would make them more striking,” Amelia said.

“There are, I think, three possibilities,” Miss Hoskins said. “We could use crayons, as I believe you mentioned last night. Paint, possibly watercolours, could be used. Or we could use coloured paper. There are some relatively new offerings based on the developments in artificial dyes. Perhaps we should note prices, but not buy them today.”

“How do you propose to use the coloured paper?” I asked.

“The paper would be cut into the shape of the coloured area then glued to the board using mucilage.”

We asked about coloured paper. The sales clerk said some people were starting to call it ‘construction’ paper, but he did not know the reason behind the nomenclature. We took note of the selection and

the prices.

Given that the shop had only two dozen sheets of the Bristol board in the Imperial size in stock, I there and then bought the lot, as I feared we would be quite likely to make mistakes and have to discard several.

The clerk found some large brown paper to wrap our boards and a paper bag for the other items and we went back to the office with them.

“Shall we work here?” Miss Hoskins asked.

“It does have the big work table,” Amelia noted. “But we could use better light.”

Victor was still there – it was, after all, adjacent to his apartment – and he said “I think I could install a pair of gas lamps using a rubber hose from the stop-cock over there.” We had a gas pipe that ended in a tap and a conical fitting that allowed us to connect a burner. It was not entirely the best practice in gas installation, but would allow us a good light.

“Can I leave it to your judgement and management, Mr. Crane. But do get receipts.”

Amelia said “We should also think how we will transport the finished boards to King’s Cross.”

Miss Hoskins said “Art students often have what they call a portfolio, which is a large, flat sort of case with handles.”

“Perhaps some canvas made into a sort of envelope. I think Betty and I could make something suitable. But the opening and fasteners should be on the side, probably the side facing the rear when walking, so that rain and splashes do not wet the boards.”

It turned out that we used such a portfolio case made a couple of inches bigger all around than the boards. Later we found that we could take two boards that were to be discarded because we made mistakes and use them to stiffen the case. By gluing the damaged boards to the inside of the case, one each side, the case was easier to load and unload.

I said “My burning question is how we will transfer the information in our report to the Bristol boards.”

“Well, Richard, when I drew the ones in the report I used pencil on squared paper. Then I put the tracing paper over the diagram and finally cut out and glued the diagram into the report. I repeated the tracing and gluing for the carbon copy.”

“Could we use the same technique using large squared paper, or several sheets glued together?”

“That would probably work, and is one possibility,” Miss Hoskins said. “You could also use long rulers and draw the diagram directly on the board. It would need more care and take more time, but I think would look better.”

“I had better see if I can find my engineer’s ruler,” Crane said.

“Mine also, since we need horizontal and vertical simultaneously,” I said.

“Perhaps we should just buy a pair of good yardsticks,” Amelia said.

“That would be easier to work with on the large boards,” Crane agreed.

“We’re having lunch tomorrow with Maude,” I said. “I’m sure the ironmongery will have some choices. And I think we should probably try using the tracing method on one diagram and the direct method on another and compare results before we prepare more boards.”

“That would be very sensible, Mr. Carr,” Miss Hoskins said, “though it does mean you waste one board.”

“I think our clients would prefer the best presentation we can give. In fact, I am wondering if we should make up some boards to present the most salient points of our summary, in addition to the diagrams.”

“Why don’t you prepare a handwritten outline of the items we should present, Richard, while Miss Hoskins and I attempt the diagrams. Of course, you and I should spend a little time later today selecting the diagrams we should include.”

Actually, this was not nearly the chore Amelia imagined, for I had already decided to prepare boards for all the diagrams, even though we might not use all of them in the formal presentation. It would cost more effort and boards, but I believed it would be worth this.

* * * * *

We were all at the High Street at half-past eight on Monday. I was carrying two yardsticks. Before dinner on Sunday evening, James and I had walked to the ironmongery and rumaged through the out of date stock as well as the current tools. The ones I had

found were actually considered rather old-fashioned because of the style. They would hopefully serve just as well as any others.

The office was quite crowded, but Crane said he would work in his apartment, and I would sit in the possibly anachronous wing chair we had placed near the small stove. Today the stove was not lit. I had a notepad which I rested on a book and had put some pencils in my jacket pocket. I decided to base the presentation on the final section of the report, which I felt would give me most of the ideas I wished to cover.

Amelia had brought the carbon copy of the report, but had spent some time Saturday evening putting strips of paper between the sections so that we could work on them separately. I took the final section and set it on a stool. It occurred to me that I would have to ask Parks or Crane how it had been acquired, since I had no recollection of its purchase. Still, it was most useful to me today.

I had hardly put two lines on my first attempted topic when there was a loud knock on our door. Gus had become the *de facto* doorman for the office in some manner none of us could definitely recall. He allowed in a man in a post office uniform.

“Is this the office of Richard Carr and Associates?” he asked.

“It is,” Gus answered.

“Just come to let you know we’ll be installing the telephone on Wednesday, and we need to know there will be somebody here to let us in and tell us where the receiver is to be placed.”

“There’ll be somebody here,” Roger Parks said. “We will make sure that the place for the telephone is clear for you to work.”

“We will need to run a wire along the wall to the front of the building. It will take about an hour or so.”

I said “Thank you, Mr.”

“Cornish. Gregory Cornish. But I’m just the man sent to ensure that the installation engineers are expected. Oh. I’ve got another Carr for the week following. I wonder if there is a connection.”

“*Sans Pareil*, Mountfield Road,” I said.

“Ah. That’s it,” he said, looking at a large notebook.

“You need not come round, if you tell us the day and time,” Amelia said.

“Tuesday morning, May 12. And we will again need to know where the receiver is to go and space to work.”

“We will make sure to be ready,” I said.

After Cornish left, I said “Do you want it on your desk, Roger?”

“Yes, it could go here.”

Miss Hoskins said “If I may suggest it, I believe you would do better to set a modest desk near the door where the telephone would be the responsibility of whoever was to receive visitors, messages, post, or, of course, telephone calls. Otherwise, a senior member of the firm becomes the person who answers the telephone, which could interrupt important work for possibly a trivial call.”

“That does make sense,” Roger said, and the rest of us agreed.

With that, we made some tea and settled in to our various tasks.

* * * * *

Amelia and I talked about where we would put the telephone in the house as we walked home from the office that evening.

“Do you not want it in our office – the front room?” she asked.

“That will be the right place if we expect to use the telephone for calls related to either the engineering work – even between home and the High Street – or family and personal matters. But if there are calls when we are out, messages, telegrams, then Betty or cook will have to run from the kitchen or scullery, or upstairs. And possibly the ring will not be heard.”

“So where do you think it should be?” Amelia said.

“Would it make sense in the hall? Perhaps opposite the kitchen door? It would be central from the office, the kitchen, and the office, and could be heard from upstairs, at least if the doors are open, but probably in the night when it’s quiet anyway.”

“Wouldn’t that narrow the hallway and make it awkward to carry things through, especially for Betty or cook?”

“Yes. That would be inconvenient. But I think we should see if there is space to make a niche into the cupboard under the stairs. We’ll measure tonight and check that there are no pipes or posts in the way.”

“Oh. If that is possible, it would be a good idea.”

It turned out that the main awkwardness in positioning the niche was the triangular nature of the stairs. However, given there was a door into the cupboard, and that it was possible to use the underside of a stair step to affix the floor of the niche, we worked out the rough design.

“Shall I ask Rickett to try to carry out the job,” Amelila asked.

“Actually, I think I might find it interesting to renew my skills with wood. Would you be willing to help me put linseed oil on the wood when it is done?”

“Certainly, but we are now very busy with the presentation.”

“I agree, but I believe the counterpoint to that mental work of a little carpentry will do me some good. In fact, I will begin as soon as I have changed into some suitable clothing.”

I did change, and my various tools accumulated over the years for work about the house were in fact in the under-stairs cupboard, many on hooks or small shelves for the purpose. I laid down some newspaper to avoid too much mess on the carpet runner, and got an oil lamp so I would be able to work.

The niche was going to be 42 inches from the floor. I would cut away a section of the wainscotting 15 inches wide and removed up to the angle of the stairs where the wainscotting fitted under the diagonal beam of the stairs. Our stairs had risers of 7 and 1/2 inches and run or step width of 10 inches. I decided to add a 12 inch high rectangle below the triangular top of what would become the niche. The cut out wainscotting was this shape and if I could avoid too much waste I could use the cut-away material for the rear of the niche. I decided to make it 12 inches deep. That was a largish span of wood, and likely I would do well to use two or three widths to make up this depth..

I found my hand drill – a type I believe may have originated in America over a decade ago – which had a small crank on the side that turned a gear to spin the bit. Marking the points on the wall that were the two bottom corners of the wainscotting, I drilled 1/4 inch holes carefully. Then I used my keyhole saw to cut across horizontally between the holes. The wainscotting was tongue in groove and on a 3 inch pitch, so 5 pieces made up the 15 I needed. The only awkward step was that both sides were held by a tongue or a groove. Taking a putty knife, I sharpened one corner and one edge and put it on the tongue at one end, forcing the putty knife gently into the gap between the wainscot lengths. Then tapping gently with a small hammer I was able to cut the tongue away. The let me pop out one side of the wainscotting from the bottom and ease one length out of the top groove in the stair beam. The other lengths came away more easily, of course.

Amelia came out to look. “Oh. You’ve already got the niche open, and supper not yet on the table.”

“Am I not an engineer?” I asked with a smile.

“Engineer or no, I will not have you leave a mess for the servants to clear up.”

“I will clear away. I cannot continue now as I need some wood, which I will order tomorrow from the timber merchants.”

* * * * *

I got up a bit earlier than usual the next morning so I could visit a local timber merchant off the Camden Road to order the wood I would need. I would get the merchant to cut the pieces to size, even though that would cost a bit. The timber yard had a power saw and would do a cleaner job with a lot less work for me. I would collect the wood on my way home, since it was too small an order to have delivered, though possibly I would take a hansom, since I always buy a bit of extra wood.

The job would need some wood screws. Normally I would get them from the family ironmongery in Tonbridge, and if I had thought ahead I would have got them when I visited the shop in Tonbridge with James on the weekend. However, passing an ironmonger on my way from the timber yard to the High Street, I went in and bought enough for my niche.

This Tuesday I continued my outline presentation. The actual delivery would, I suppose, be a lecture, but I did not intend to read it word by word. By using the concluding section of the report as I had suggested, I was able by the end of the morning to have a set of pages, each presenting a major element of risk to the railways, or a particular important issue that was part thereof.

Traditional lectures were customarily delivered from the lectern and listened to or slept through according to the inclinations of the audience members. They were secular sermons. We were definitely going to put our figures on the boards, but I was becoming more convinced that having condensed elements of my spoken essay on the boards would aid in keeping the attention of my listeners.

I had been writing the notes in long-hand, but for one of the set of points I wanted to make I changed to printing my summary phrases

in quite large letters. The sheet I was using became a miniature of what I could imagine a completed board would look like.

I was writing with a pencil, and used a rubber to tidy this sheet and give it a title. It gave a capsule of the topic I wanted to present, and I thought it would look well on the larger boards, especially if we could print the lettering in a clear and consistent way.

We sent Gus out to a nearby bakery that would prepare sandwiches and we stopped briefly for something to eat and a cup of tea. Amelia and Miss Hoskins insisted we not touch the boards unless we had washed our hands. Before we recommenced our efforts, they showed me the two example boards prepared by the tracing and the direct technique. We would, if we decided one of the methods was unsatisfactory, have to waste one board. In the event, both looked satisfactory.

“Which was the easiest to prepare?” I asked.

“Frankly, that is difficult to answer,” Amelia said.

“Yes,” Miss Hoskins agreed, “to prepare the diagram via tracing paper was quite quick and easy, but positioning it on the board and getting the mucilage spread evenly and thinly so there were no bumps in the tracing paper was quite difficult.”

“Could you use the tracing to create the diagram outline, and a sharp pencil to transfer that to the board, then ink or colour it in?” I asked.

“That might work,” Amelia said, and Miss Hoskins added “We probably could use that to get a better idea of favourable positioning of the diagram on the board.”

“I am quite pleased with the lettering that captions the figures,” I commented, “but I note there are yet to be titles added.”

Miss Hoskins said “We need to decide the size and style of the lettering. That would be the font if we were in a printer’s shop.”

“How do you propose to maintain a level of conformity?” I asked.

“We should prepare an alphabet on good regular paper with pencil and then ink them and we can then hold these close to the board when we print the titles and other lines. We should use very light pencil to draw boundary lines for the top and bottom of the text as well as the top of the lower case letters. These lines can be erased with a rubber, or if we draw them faintly enough, they will not be noticeable. The letters can be first printed in pencil, though some sign painters can do the text in a single attempt. I don’t feel so con-

fidant, and would use a soft pencil first, then ink the letters when I am satisfied.”

“Can errors in inking be corrected?” I asked Miss Hoskins.

“With difficulty, I believe. I once saw someone use a scalpel to cut off the ink of a mal-formed letter, then fill the hollow with some white matte paint, before re-doing the letter. But it is a measure to be taken in desperation, I fear.”

“Using pencil first will be our course, I think,” Amelia stated.

“Will you be happy with a single size of characters?” I asked.

“My suggestion is to take a standard alphabet and enlarge it up by 50 percent for titles and down by a third for captions.”

“Does that mean that your lettering on the two samples may be unmatched to the alphabet you are going to use?”

“I think the lettering I have used will be quite similar, but I will need to use the size of the letters on the diagrams to set that for the main and title text.”

We went back to our tasks, with Miss Hoskins working on the alphabet of letters to use as a model for our text. I returned to simplify my previous handwritten pages to a printed form that would be a model for the full-sized versions.

* * * * *

Tuesday evening I was able to get the niche constructed. Some 2 inch by 2 linear pieces screwed to the underside of one of the stairs supported the tongue in groove floor. To some other pieces of 2 by 2 I was able to screw more tongue in groove for the side wall, and also the saved wainscotting.

Amelia came to take a look. I held the lantern so she could see to the back of the indentation in the wainscotting.

“It looks nice, Richard, but is it not a little rough?”

“I will use sandpaper tomorrow night, then we will rub on boiled linseed oil a few times.”

“Ugh. I don’t like the smell.”

“We will ask Betty to keep as many windows open as is possible without inviting burglars. Fortunately, we are now into Spring.”

* * * * *

Number please



The installation of the telephone on Wednesday was complete by ten o'clock, as the installers came first thing in the morning. As we wanted to try it out, I suggested we call Maude or James at the ironmongery and ask them to call us back. However, we were uncomfortable as to the procedure, but Miss Hoskins said she would illustrate the use.

“What is the number at the shop there, she asked?”

Fortunately, I had prepared for this possibility and had written it down.

Miss Hoskins said “You just pick up the earpiece and wait for the operator to ask you for the number, then tell her, in this case Tonbridge 143, and they will connect you if the other party answers.”

I sat at the instrument and picked up the earphone. There was some clicking and then a woman's voice said “Number please.”

“Tonbridge 143 please.”

“Thank you caller. Connecting you now.”

I heard a buzz, then a silence, then another buzz, then there was a click and Maude's voice said “Carr Ironmongers. How may I help you?”

Rather too loudly I said “Maude. It's Richard. We had the telephone installed this morning. Tunbridge Wells 228.”

Maude congratulated us and I asked if she would call us to verify that the number was correct and that I would let Roger answer.

We disconnected and I hung the earphone on its hook. Miss Hoskins said this was important, as the telephone would not ring unless the hook was held down by the weight of the earphone.

The telephone rang. Roger waited until the second ring and then picked up the earphone and put it to his ear and said "Tunbridge Wells 228. Richard Carr and Associates. Roger Parks speaking."

He had a short congratulatory conversation with Maude and then hung the earphone up again.

We were now connected to the telephone.

* * * * *

Our work progressed quite smoothly and by Friday morning five of the eight diagram boards were more or less complete, save only some minor attention to erase light pencil lines. We also had three of the plain text boards complete, and had found we were able to prepare them in about an hour each, and for the lecture there were going to be about fourteen of these. On Tuesday I had sent Gus to Smith's to order 18 more boards to be sure to have enough if we made any mistakes, since we were close to the original count of two dozen. The new order was supposed to be there this morning.

In fact, when we heard steps on the stairs, I thought it may be someone from Smith's with our order – they were just down the street and had been known to bring us orders rather than waiting for us to come to get them. However, the person who presented at our door was Mrs. Westlake, and she appeared to be in a state of high dudgeon.

"Miss Hoskins, you are here working for Mr. Carr, but Mr. Carr has not come to me to engage you. That is not right. You are to work only through my agency."

Miss Hoskins looked frightened, so I intervened. "Mrs. Westlake. It would be very wrong for me to ask Miss Hoskins to do any typing or shorthand without your involvement. However, she is doing neither here, and I gather you have sent her no such assignments recently."

"It is customary for my workers to ONLY work through me, regardless. This is highly irregular and I must insist that you pay me and I will pay Miss Hoskins her portion."

"And a rather miserable portion that would be," Amelia said.

"Well! The cheek of it all! All I will say is that if Miss Hoskins wishes further work, she will have to give me my agency commission

on this work, or she can considered herself removed from the list of workers I will engage.”

Miss Hoskins looked panicked, and I felt she was about to give in to this threat, which I felt would be entirely wrong. However, she likely feared that she would lose her livelihood, and the decision was not mine to make.

At this moment, Roger Parks intervened. “Mrs. Westlake, I am going to ask that you leave our premises. Miss Hoskins must be given time to make a decision on this matter. Let me suggest that she will, by the end of today, communicate to you her decision on whether to continue as one of the people who awaits your invitation to do work for you and in that way provide revenue to your firm. I have here your card, and it has your telephone number. Shall we say that you will be contacted before four o’clock?”

“I think she should decide now!”

Amelia said “Perhaps you could advance the decision by returning with the written contract you have with Miss Hoskins.”

“So you wish to hide behind legal technicalities? I shall expect a decision by four.” And Mrs. Westlake left in a rush.

There was a silence for some seconds. Then Roger said “Miss Hoskins, I will ask you to suspend any decision for a few minutes. Victor. Can Mr. Carr and I use your apartment for a private conversation?”

“Of course, Mr. Parks.”

When we had stepped into the kitchen/living room and shut the door, Roger said in a low voice “It seems to me that more engineering firms are submitting their work in typewritten form. Moreover, Miss Hoskins’ work is seemingly of a high quality. She seems good at the preparation of the diagrams, and has taught us how to use our telephone and where to place it. I think she could be an asset to us. We could offer her services to other engineers to type-write their reports if we don’t have enough work for her ourselves. However, I doubt that is the case.”

“Actually, Roger, I was wondering if we should employ her also. That you suggest it means we are in agreement. But what wage should we offer?”

“I believe you told me telephone operators are paid 8 to 12 shillings per week. Let us offer 12 and 6 per week as a probationary wage, essentially half a crown a day, but only after the presentation

board work is done. And we should revisit that after three months.”

“There is the matter of a typewriting machine. Miss Hoskins has her own, which is most unusual. She was thinking of setting up on her own, but had none of the contacts to get work, so went to Mrs. Westlake.”

Roger said “I’ll bet that is why Mrs. Westlake is so exercised. The advertisements for typing machines rarely give the price, but I have heard that new ones go for over £ 20.”

“My goodness, I had not realized.” Indeed I was quite shocked, and said “Then we need to arrange an allowance for the machine.”

“A shilling a week would be £ 2 / 10 / 0 a year. That suggests a ten year full cost recovery, which might be a bit low, but we could offer also to pay for maintenance, as I believe they need cleaning and adjustment.”

“Fair enough. Let us see what Miss Hoskins thinks.”

We returned to the main office and Roger said “Miss Hoskins, before you make a decision regarding Mrs. Westlake, we feel that we would like to offer you an opportunity to continue with us after the present arrangement is complete. We were thinking of something like 12/6 a week, or a half-crown a day if you prefer to work a shorter week. We understand that you have your own typewriting machine, so we would offer an additional allowance, say a shilling a week if we estimate the value correctly.”

“And my duties here. What would they be?”

I said “We have realized that we should be submitting our letters and reports in typed form. But I can foresee that there will be other engineering firms that need their reports typed, and a general stenographic office may be less able to accommodate their needs, so we might take on such work. There is also work like that you are doing with Mrs. Carr and me at the moment, and that also may take the interest of others. Besides, there is always ongoing activity to keep track of work in hand, of invoices and payments, as well as correspondence.”

“We also now have the telephone,” Roger said.

Miss Hoskins said “The offer seems fair, and I have liked the work with this firm so far. It is more interesting than the regular letters and other documents I normally type. Besides, I doubt Mrs. Westlake will be well-disposed to me from now on, and will put me last in the list to get work assigned. So, yes, I will take up your

offer, starting as soon as the current project is done.”

* * * * *

By mutual agreement, we decided to work until the mid-afternoon of the Saturday. On our walk in, Amelia said “I hope the Petch family has a safe passage.”

“Oh yes. I’d almost forgotten they sail today. Let us hope all goes well.”

Miss Hoskins nearly bumped into us as we arrived at the High Street offices.

“Did you take the train from High Brooms, Miss Hoskins?” I asked as I unlocked the door. Victor would likely be inside, but we mostly kept the outer door to the street locked except when visitors were expected.

“Actually I walked, though it is about two miles.”

“Komarova, who I do not believe you have met, has a bicycle, with which I believe she frightens the faint of heart.”

“I have met her. She is a force of nature. It was she who informed me that you hire ladies to do work for you. If my position here truly becomes permanent, I may follow her example and acquire a bicycle.”

“When you are ready, my cousin Henry in Tonbridge may be of assistance. He has established a speciality in the family hardware business concerning bicycles and their accessories. Lately he has, I believe, taken to trading in second-hand machines, refurbishing them so they function properly but still cost less than new.”

“I will definitely ask when I am in a position to have a bicycle. Of course, I will need to learn to ride, but Mrs. Komarova demonstrates how useful it is to be able to transport oneself quickly around the area.”

We were by now inside the office and I connected the hose to the gas lamps Crane had installed above the work table and lit them. They were very helpful. I should get him to make the connection more permanent. His apartment door was closed, and we did not attempt to disturb him, but a short while later he came in from outside.

“There you all are. I wasn’t expecting you until a bit later, and was out buying some things for my breakfast.”

A little later, the smell of bacon cooking was such that I heard my stomach growl. Amelia said “Your digestive system is not afraid to make the complaint mine is suggesting. Shall I go and buy some bacon and bread and we will have some bacon sandwiches for a very early lunch? Or a second breakfast?”

Miss Hoskins laughed and said “I would be delighted, but must pay my share.”

“All right,” Amelia said, “But let me go now. Mr. Crane, we are going to get some bacon and bread and follow your excellent example. We will make some bacon sandwiches if you will allow.”

Victor came out into the office and said “There is plenty here, and we can arrange to replenish my stock later in the day.”

“We will need to keep away from the work table while we eat, and wash our hands carefully or we will have grease spots on the display boards,” I said.

“Of course, Richard. That goes without saying. But I will prepare the sandwiches, you and Miss Hoskins continue your work on the boards.”

* * * * *

On Wednesday morning, May 13, our new telephone rang in the hallway around 8 o'clock. It had been installed the day before and we had tested it between home and High Street office, as well as calling Maude and James at the shop. They did not have the telephone at home.

I heard Betty answer “Tunbridge Wells 257.... Yes Mr. Crane, I'll get him.”

Before she could come into the parlour where we were having breakfast, I was already on my way to the hallway. Betty saw me coming and simply pointed to the telephone and went back in the kitchen.

“Carr here,” I said as I put the listening piece to my ear and bent slightly to talk into the microphone.

“Mr. Carr, I've just had a telephone call from Miss Hoskins. She was able to telephone from a nearby shop. Unfortunately, her mother has died late last night. She won't be able to come to work with you today.”

“We are very close to being finished fortunately, so Mrs. Carr and I can carry on.

“Victor. It may be risking an intrusion on Miss Hoskins’ privacy, but do you think it could be useful to her if you were to go there and offer what assistance you can?”

“Actually, Mr. Carr, I was going to ask your permission. There is no work in hand that I cannot carry out in the evening or on the weekend, and I suspect there may be a number of tasks Mrs. Hoskins’ passing may create. I will take my bicycle and go immediately.”

“Ask if you have any questions or needs. And now we have the telephone, communications are a little easier. Mrs. Carr and I will go to the High Street shortly.”

I relayed the sad news to Amelia and Betty – Hilda was not yet here. We completed our breakfast and Amelia and I departed for the High Street. As we walked, I said “Are you in agreement with my sending Crane to see if Miss Hoskins needed assistance?”

“Absolutely. It is good he has a bicycle. Where does he keep it?”

“There is a shed behind the building and a passage way through to the High Street. Given that Komarova and likely Miss Hoskins will also be riding in, we should make sure there is space for their machines. It is not a good idea to leave them on the street, partly because they block the pavement, but also because they get wet in rain or can be vandalized or damaged by accident.”

“Yes. And it may be that we should think of using the apartment space for business purposes. I can see putting the typewriter behind a door to reduce the noise for the rest.”

“Where would Crane go?”

“I don’t know, but it is hardly unusual for a man of his age – is he not over 30 now – to have lodgings. And we are not about to evict him with no notice. More that we should start the discussion of how the office should be configured for the most effective and efficient working of the firm.”

* * * * *

Miss Hoskins was able to rejoin us late in the morning of the 14th, though she had to leave for an hour in the early afternoon and could not stay beyond five o’ clock, as there were funeral and other

arrangements. The funeral itself was on the morning of Saturday the 16th. Amelia insisted we go, and I was glad we did. It was held in a small Methodist chapel in High Brooms. Crane was there also, and the three of us were a substantial proportion of the very small congregation.

We did not go to the Tunbridge Wells Cemetery for the interment. Crane told us that he had suggested Miss Hoskins go alone with the undertaker on the hearse, thereby avoiding expense of a second carriage.

We had walked to High Brooms. I asked Amelia "Shall we walk back, take the train, or see if we can find a hansom?"

"Let us walk. Mr. Crane, are you also going our way?"

"Yes. I will join you, at least as far as Monson Road. I want to look in some of the shops for some new clothes. Or rather, for some ideas for some new clothes."

I said "I wanted to thank you, Victor, for giving assistance to Miss Hoskins."

"Actually, Mr. Carr, she dealt with things in a very competent manner, but I believe my presence and some questions that I posed carefully so they would not seem like direct advice were helpful. Miss Hoskins herself said so.

"However, I believe she is quite worried about the future."

"How so. We have now engaged her on a continuing basis, so she has at least a regular if not extravagant income. And I believe her mother owned the house. Or perhaps it is mortgaged?"

"No. I asked that of her. It is more that there were no savings. There will be a solicitor's fee to transfer the ownership of the house, and the cost of the funeral, so I believe there is a shortfall in monies. On top of that, the two young ladies who were renting rooms had been increasingly unhappy that their lodgings did not offer meals, and the kitchen was then shared. Never a happy situation. Mrs. Hoskins death caused them to express fears about staying in a house where there had been a death, so on top of everything else, the rental income will be gone as of the end of next week."

"That is most unfortunate. Amelia. Should we offer to loan Miss Hoskins some money?"

Amelia did not get a chance to reply to me, as Crane said "I was thinking of another possibility. The office is becoming quite ... er ... busy, and if Miss Hoskins is to type for much of the time it would be

better done in a separate room. Indeed, perhaps the door should be fitted with some form of gasket to minimize noise in the main office should the apartment space be used. I could rent the two rooms in Miss Hoskins house as a lodger, and pay for a period in advance, which would serve as a loan to her. My only concern is that her having a male lodger could be considered improper.”

Amelia said “There is always that danger, but you know that my cousin Mabel used to rent rooms, and that is how she met her husband, Captain Buckley. I think you will need to ensure that you and Miss Hoskins are always respectable in behaviour and appearances, but the situation would not be unusual.”

“If Mr. Carr is of the same general opinion, I will go back this evening and ask Miss Hoskins if she is amenable to what I have told you. But I see we are now at Calverley Road. Though the shops that mainly interest me are on Monson Road, I think I will part from you here to look in some on this street.”

* * * * *

It transpired that Crane’s suggestion was very welcome to Miss Hoskins apart from some misgivings about the propriety of a single man and a single woman sharing a roof. Perhaps on Mountfield Road, there would have been complaints, but on the street where Miss Hoskins’ house was situated, there were many different living arrangements, a couple of which my cousins from Tonbridge who associated with workers in the building trades assured me were much less proper and regular than Crane proposed.

Crane had, it later turned out, provided Miss Hoskins with some cash that very Saturday night, as she was about to pawn the last small valuables she and her mother had managed to hold onto. As the two young ladies who were going to leave the following Friday were using the kitchen, Crane invited Miss Hoskins to find a meal with him in some nearby eatery, which turned out to be a public house in which some of the local people were having a sing-song. While such spontaneous singing can be the result of an excess of drink, in this case it was a group of men and women who were simply entertaining themselves, and there was a piano.

The old music hall songs, as well as a couple of songs that Marie Lloyd had made notorious by innuendo despite their innocent words,

brought a few smiles and the odd laugh to Miss Hoskins. Crane thought it did her a power of good.

Certainly when Miss Hoskins came to the office on Monday morning, she seemed fully composed and we completed the boards by lunchtime.

As we prepared to break for some sustenance, I said “This afternoon, if you will permit me, I would like to deliver the presentation to you to see how it sounds and to ensure the timing is appropriate.”

“We don’t have an easel, Richard.”

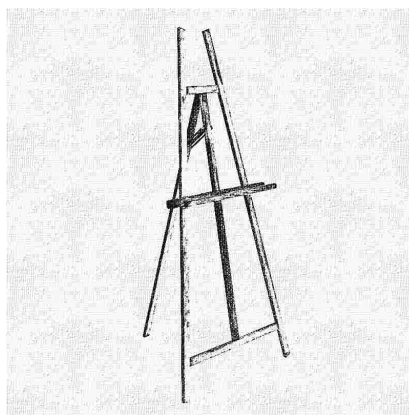
“No, but a book or weight on the desk that is against the wall will allow the boards to be propped up. My suggestion is that we put them in order and one of you remove them one by one as I speak.”

Miss Hoskins said “I should number the boards on the back so that they can be easily be reordered if they get out of sequence.”

Amelia said “Yes, that will be helpful, as I’m sure there will be questions and we may have to display some boards again. I will make an index to help with that so Richard can begin to answer questions while I find the right board.”

* * * * *

Peroration



Having written and, in fact, rewritten the boards several times, I found I could present the material with some fluidity. Amelia also knew the content and I only rarely had to ask for the next board. Miss Hoskins was timing my rehearsal and I took 65 minutes.

“I think I should try to make it about 10 minutes shorter,” I suggested.

“Richard, I think the discussion of single track accidents took longer than is needed. If the gentlemen are mostly from the railways, they will know about the innovations of Edward Tyer, so you can likely just mention that they exist and note their application.”

“Yes,” Miss Hoskins added, “you took over five minutes on that board alone. I kept a tally of the times you started each board.”

“Are there others where I took a long time?”

“Your introduction,” she noted. “That was also over 5 minutes. I think you could trim it to three, or perhaps even two.”

* * * * *

On the Tuesday – May 19 – Amelia and Miss Hoskins finished the canvas portfolio case by gluing in two discarded boards and putting in eyelets and laces for the closure.

Miss Hoskins insisted that we print the name and address of the firm on the outside.

“I think it will serve as a form of advertising,” she explained.

While they did this, I looked at my hand-printed sheets that were used to make the boards. I was adding notes to these, including abbreviated instructions to myself. Using Miss Hoskins’ times, I found a few places more where I could streamline the presentation.

After lunch, I had arranged to make a second, shall we say dress, rehearsal to Parks, Crane and Gus, with Miss Hoskins once more timing the lecture. This time I was finished in 55 minutes and my colleagues applauded.

“That was very smoothly done, and utterly comprehensible and convincing,” Roger said.

“You conveyed a lot of information in that hour,” Gus added.

“These boards are very persuasive,” Crane said. “They turn a dry lecture into a sort of theatrical event, but for engineering. I know that I have to acknowledge Mr. Carr for the presentation, but I sense that Mrs. Carr and Miss Hoskins are the architects of the ... er ... can I use the word drama?”

“Indeed, I recognize what you say, Crane. The drama does arise from the perceptiveness and inventiveness of our two female colleagues, for colleagues they are in this enterprise.”

Roger said "We should be attentive to the possibility other firms may ask us to assist them with presentations. Perhaps as one of her first assignments with us, Miss Hoskins can try to provide us with some costs and pricing that would be attractive to others but profitable to us."

I said "I would add to that a second and related task to develop similar cost and price proposals for typewriting engineering reports. In this latter pricing, I think Mrs. Carr will need to suggest ideas related to the construction of statistical diagrams. However, I do not think as yet we should be overly detailed. Mainly I wish to avoid a situation where we are asked to do something and cannot estimate a price."

"Yes. I can undertake that. I like the ideas very much, and hope we can win such work. Am I to assume I should err on the side of caution, that is to avoid underestimates of costs and to price higher than may be the ultimate level in case of either errors or negotiations that absorb money?"

"Well put, Miss Hoskins. You have the right idea," Roger said.

I said "To return briefly to our presentation, did any of you note any weaknesses or gaps in our content, or did you have any questions that may be difficult for us to answer?"

"Perhaps we know too much about the content," Crane said. "We were here through the development of the report and the presentation, so we know too much."

"Yes. I wonder what we will be asked."

* * * * *

We had decided to take the 20th – Wednesday – away from the report and presentation, but our resolve failed at lunchtime, and we spent the afternoon either re-reading the carbon copy of our report or else reviewing the paper manuscript of the boards. We had passed some of the morning in the garden, more for diversion than to make a truly productive contribution. Hilda and Betty pressed my suit and Amelia's costume. At Hilda's suggestion we packed a small valise with an extra shirt for me and blouse for Amelia, some extra socks and stockings, a spare tie, collar studs and cufflinks. She also suggested toothbrushes and combs and a nail file. "You want to

be ready in the event you get heated or the train is dirty or spews smuts.”

By the time we ate supper at half past six, we felt that we knew our material. Knowing a heavy meal would be make us feel sluggish, possibly even in the morning, we had asked for a salad and a vegetable and egg pie. After eating, we went for a walk through the Calverley Grounds, along one arm of Calverley Park and along Calverley Road. There were too many places in Tunbridge Wells with that name. Whether to blame John Ward, the developer, or Decimus Burton, his planner who laid out the Calverley Park development in 1828, was open to debate. However, the multiplicity of uses of the same name definitely could be confusing.

This particular evening, we were making a tour, but I knew it would take us past the old Royal Oak Inn, and we stopped for a drink. Both of us chose to have a half of cider. As we sat sipping our drinks, Amelia asked “Are you nervous about tomorrow?”

“More excited, I think. You?”

“Perhaps excited is the better word. I believe we have prepared well, and I am confident we did a good job both of the report and the presentation as you delivered it.”

* * * * *

We planned to take a train around nine o’clock to Charing Cross. This got us there around half-past ten, and we took a hansom to King’s Cross, since we did not want to be risk any unforeseen delays. Of course, being so early could be a nuisance in that we would be waiting around for quite a while. However, Oakley had arranged for one of his assistants to contact me so that we could plan the details of setting up for the presentation. I had written back to this assistant – a Mr. Frederick Smith – saying that we would try to arrive near eleven o’clock and put our presentation in the boardroom and check that the easel was in the right place and so on.

We presented ourselves in the GNR offices and asked for Mr. Smith. He came to greet us almost immediately, so quickly, in fact, that I wondered if he were waiting nearby. In any event, we were ushered into the boardroom and there was an easel near the head of the table.

Amelia asked “Mr. Smith. Do you think that the members of the audience would be able to better see the material on the easel if we were to place it on one side of the table, near its middle from head to foot? The audience members on the side closest to the easel would have to turn their chairs, of course.”

“Mrs. Carr, I do believe that will give a better view. Why do we not try to place it there and then see how well it looks from different seats.”

We quickly placed the easel and Amelia took the boards from the portfolio case and placed all two dozen on the shelf of the easel. They sat well upon it. There was also a lectern. I said “I think the lectern should be placed to one side of the easel so I do not obstruct the view of the easel. Do you think I should have the easel on my right or my left?”

Amelia answered “As you are right-handed, I suggest you stand to the left of the easel, and I will put a chair to the right where I can sit to change the boards as needed.”

“Will it make a difference?” Mr. Smith asked.

“Mr. Carr may need to point out specific elements of the figures. One of our staff, Miss Hoskins, has made this pointer from a length of dowel.”

As Amelia said this, she took a length of dowel about 20 inches long and what turned out to be 5/16 inches in diameter from a narrow sleeve within the portfolio case. One end of the dowel was slightly pointed and that point was painted white.

“That will be most useful, and it is a nice surprise,” I said.

Thus we moved the lectern about two feet to the left of the easel, and put a chair the other side. Mr Smith tried sitting in different chairs and was satisfied he could read the boards from any of them.

“Do we need to offset the chairs on the nearer side from those of the more distant one?” I asked.

“A very good point, Mr. Carr,” Smith said and began to offset the chairs slightly. “I assume you want the easel to have the best visibility, and will tolerate that the view of yourself may be obstructed?”

“Correct, Mr. Smith.”

It was now approaching a quarter to twelve. Smith said “You have some time before your lecture, and in anticipation I made a reservation for an early luncheon for you at the Midland Grand

Hotel in St. Pancras Station at noon. I recognize that the Midland Railway is one of our competitors on some routes, but the hotel has an excellent dining room. Identify yourselves to the head waiter. He will put your bill to our account as per Sir Henry's instructions."

"Thank you, Mr. Smith."

"I shall be here from a quarter to one. Oh. I nearly forgot. The Ladies Cloakroom is just down the hall. We get rather few ladies in these offices, but Her Majesty and her ladies in waiting do pass through on the way to Balmoral on occasion."

"Thank you, Mr. Smith. It had crossed my mind that I might need to ask."

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If we had been hungry, we could have had a marvellous feast in the Grand Midland dining room. However, given the pending presentation, we only wanted something light and settled for an excellent mushroom soup and a very pleasant salad. Rather than return immediately to King's Cross, we walked up to St. Pancras Gardens and sat for a while on a bench enjoying the mild weather.

"Do you want to see if we can walk round via the canals and basin, or back the way we came," I asked.

"Normally, my sense of wanting to see novel views would suggest we explore, but there is the danger of not finding a passage back to the offices of the Railway, so I think we should go back the way we came."

"Yes, and the area is busy with goods traffic, including coal. We'd best avoid such risks."

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Mr. Smith was already in the boardroom when we returned to it just after one o'clock, both having visited the cloakroom and checked our appearance. After the usual pleasantries, Amelia set about checking the boards were all in the correct sequence and orientation while I did the same with the manuscript miniatures with my notes. I found the pointer would rest nicely on the lectern in front of my notes, so that I would not have to hold it all the time I was speaking. Smith disappeared for a few minutes then returned

with a stool. He went to a side table and brought two glasses and a carafe of water.

“Oh. That is very thoughtful, Mr. Smith,” Amelia said.

“Not at all, Mrs. Carr. It can be most distressing to need water when speaking and not have it available.”

At that moment, Oakley arrived, and I made the introductions, as he had not met Amelia before.

Oakley said “You have reorganized the room, to what appears to be a more favourable arrangement for seeing your presentation.”

“Mr. Smith was most helpful,” Amelia said, and that gentleman was clearly pleased to be acknowledged.

Others were coming in. Joseph Culloden appeared and said “The Major sends his regrets, though from a selfish point of view, I am pleased to be here in his place.”

“There you are, Mrs. Carr,” Sir Joseph said coming in with a couple of other men who I knew were directors of either the GNR or NER. “This is very well set up so we can see your boards. Though I have read your report several times, I am looking forward to the presentation nonetheless.”

As the wall clock – I am sure it was synchronised to the clocks in King’s Cross Station adjacent – reached the half hour, Oakley said in a loud voice “Will everyone take their places. I have received a number of requests, one might say pleas, from others wishing to attend. I see that, unfortunately for those petitioners, all the invited persons or substitutes have arrived, so there are no more seats. However, I see four of our engineering staff standing hopefully in the hall. Come in, gentlemen, if you are prepared to stand by the wall.

Now it is my pleasure to welcome you all to a presentation by Mr. Richard Carr with Mrs. Amelia Carr summarizing a study we commissioned with the NER into risks to Railway passengers, staff and assets. Sir Joseph and I were most impressed with the report submitted by Mr. Carr’s consultancy, and we have requested this presentation to communicate the main points to you.

I will not take more time on my introduction, as most of you know or are familiar with the work of Mr. Carr. The presentation will be approximately an hour, then I will moderate a question period. Please proceed Mr. Carr.”

“Thank you, Sir Henry, and thank you all for coming.” And I

launched into the presentation.

My preparation rehearsals were a sound investment, as I kept quite close to my edited timing, and finished the lecture at 29 minutes past two. Amelia had discovered that she could remove the boards one at a time and lean them against the stool with our water glasses so they remained in the correct order and orientation, with Miss Hoskins sequence numbers easily available on the top right corner of the back surface of each board. As I concluded, I was much surprised by a sudden and loud burst of applause, which lasted a full three minutes. Now I knew why the theatre was such a drug for thespians.

When the clapping tapered off, Sir Henry raised his voice and said “We will now take questions, and I will ask that you raise your hand and wait for me to acknowledge you.”

There was a long pause, nobody wanting to ask the first question. Then Sir Joseph raised his hand and Oakley said “Sir Joseph.”

“Having read the report several times, I do not have a question so much for myself as to provide some emphasis concerning the statistical diagrams. Can we have a brief description of how the Rose diagram is constructed?”

I responded “Thank you, Sir Joseph. I will ask my wife to give the explanation, as she introduced these diagrams to our report and hence to our presentation.”

As I was saying this, Amelia put one of the boards with a rose diagram on the easel. I handed her the pointer.

“Gentlemen, the purpose of the diagram is to show several related pieces of information together in a common figure. The originator, Florence Nightingale, used them to compare causes of mortality of our soldiers over time due to different causes. A particular result of note was that epidemic disease accounted for far more deaths than the battlefield enemy.

In the present case, we want to compare the importance of different risks to the Railways. This could be reported by cost or deaths, but we need a common measure. I will stress that the numbers are translated to an AREA, since it is generally accorded that the eye values area. However, I have used a simpler diagram where the length of spokes coming from a center record the measure. Those diagrams – we could call them cartwheel diagrams if you like – are simpler to draw and possibly better for quick appreciation of an is-

sue, while these rose diagrams allow more detail. As you see we have coloured in subdivisions of the pieces or petals of the rose diagram where we wanted to illuminate sub-categories of the risk. That is the case where we have attempted to segregate particularities of single track risks.

“Oh. I should note that our diagrams were prepared before the recent misadventures on the Snowdon Mountain Railway. Such matters of timeliness plague the preparation of statistical material.”

A hand went up at the far end of the table from Oakley and he acknowledged the man, whose name eluded me at the moment.

“Mrs. Carr, can these diagrams not mislead the viewer if they are so drawn? I do not mean to suggest deliberate attempts to mislead, but particular choices of design of the diagram.”

“Obviously, any statistical device can be manipulated if there is malicious intent, and as I pointed out, the use of area as the indicator of the size of a numerical measure is subject to the interpretation of the viewer’s eyes. However, though I will state very clearly that my training is not in engineering but in nursing, where I learned the value of careful reporting of data relating to health, I found in helping to prepare diagrams for the report and its presentation today that the most troubling task was to categorize the risks.

“If I may illustrate, I am sure many of you know the story of the Foxcote disaster of 1876 where a variety of separate factors involving some very young men who seem to have been inadequately trained and in one case not strong enough to operate the signals combined on a single track to cause a head-on collision. In reporting such risks, a decision must be made as to how to assign the cause of the disaster. Should we apply the entire loss to the main factor? Should we apportion the blame? And how do we uncover the slippery but deadly interactions between factors which alone would not have notable costs?”

Oakley commented “That is most illuminating. Until Mrs. Carr said so, I had not appreciated how important are the combination of different matters. The concept has been in front of our noses, but there is a lot of weight pressing to pin all the blame on a single cause.”

Culloden raised his hand and was acknowledged. “In some cases it can be important to pay attention to single causes, though I am not suggesting that we ignore their joint influence. As an important

single issue, I would draw you to the current interest in the strength of rails, as I believe the execution of this safety review reported here today has led to the set of tables created by the Carr consultancy. I know the Inspectorate has been most appreciative and we hope to see similar initiatives in the future.”

Oakley said “Thank you, Mr. Culloden. The material strength tables were, indeed, a side benefit of the safety review. And I believe we have Mrs. Carr to thank for her contribution to the line diagram form of those tables.”

There were a number of other questions over the next half hour. They were primarily matters of detail, and in some cases quite clearly, to me at least, attempts to show the questioner’s knowledge rather than gain an answer. However, none were difficult for me to answer.

Oakley said “I will entertain one more question.”

Nobody at the table raised a hand, and after an awkward pause a youngish man standing at the back raised his hand. Oakley acknowledged him.

“I hope this is not off topic, but would it be possible for Mr. or Mrs. Carr to describe how the line diagrams we have seen in the material strength tables are constructed.”

I nodded to Amelia.

“I believe it is better to show rather than tell. Let me put this board on the easel and use the back of it. It is a little grey, but I think it will work.”

She took a pencil and drew some regular lines horizontally and vertically on the board.

“Now suppose we want to know how tall men are. Would it be inappropriate to use this group to tell me their height in inches? We will put the numbers 60, 62, 64, 66, 68, 70, 72, 74 76, and 78 here at the left, and I will double the line to their immediate right. Now I will ask my husband his height in inches, though I know it to be 67.”

There was laughter as Amelia put an X in the box next to 66. “Now I will ask each in turn at the back, then the seats behind the table and then the men in the front to call out the number. I hope I will not cause embarrassment.”

In the space of 90 seconds, Amelia had finished the diagram.

“Now I apologize that I did not bring a good piece of charcoal or

chalk, but I think you can see how we have reported the numbers in a way that shows where heights are most common and their range.”

There was applause and laughter, and when it died down, Oakley said “It is a great pleasure to thank our speakers for a masterful exposition. A round of thanks and we will then adjourn for refreshments.”

The applause lasted about a minute, but I sensed it was curtailed by appetite for what would almost certainly be excellent delicacies and liquids. We withdrew to a reception room where waiters with trays of drinks and snacks awaited us.

Amelia and I each had a clump of men wanting to say something. The waiters had clearly been given instructions that we were not to be prevented from enjoying what was on offer.

“I expected a good presentation, Carr, but that went above and beyond,” Sir Joseph said. “The use of the boards made the material much more ... available. I mean to people who are not in the profession. It could be helpful when conveying ideas to the public. Pity we are not allowed any such devices in Parliament.”

Gradually the men departed and by just after four o’clock Oakley said “Mrs. Carr, gentlemen, I believe we should close the proceedings. I thank you all for coming.”

Oakley said goodbye to us, as did some of the remaining men from the audience. As they left, Mr. Smith came over and said “Would you like to retrieve your things?” My small valise and Amelia’s satchel had been locked in a closet in Smith’s office.

“I will go to the cloakroom first, if I may,” Amelia said, and I decided that was sensible for me also. We met in Mr. Smith’s office, and got our things out of the closet. Mr. Smith had brought our portfolio case, but the boards were being left for the Railway. After all, they had paid for them. My notes and the pointer I had put in the portfolio case as the questions were ending.

Smith said “Sir Henry asked me to give you this,” handing me an envelope. “It is your payment for the presentation. He wanted to save all of us the trouble of a formal invoice.”

“We will, nonetheless, send a thank you,” I said.

Having made our farewell to Mr. Smith, we descended to the street and hailed a hansom to Charing Cross. As we rode, I said “A great triumph for you, my dear.”

“I’m afraid I felt a certain excitement in presenting the ideas.”

“Yes, I felt an excitement. I can understand the draw of the stage for actors or other performers.”

We were both a little tired from the stress of being in the spotlight for several hours, and we were more or less silent for the rest of our journey. On the train home we both fell asleep, and I was quite startled to wake up as the train left High Brooms. I woke Amelia, who also seemed unready to be awake, and we pulled our minds into the present and got ready to alight from the train.

As we walked the short distance from the station – a little over 300 yards – Amelia said “Will you want any dinner?”

“I may have had more of the small snacks than I should. They were very appetizing.”

“Yes, I agree. I think just a cup of tea and a biscuit a little later. A bath and an early night for me.”

“For me also.”

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Whitsun



We did not set our alarm clock for the Friday, but took our time on rising and a lazy breakfast with the newspapers. There had been riots in Newlyn in Cornwall because fishermen from Lowestoft were accused of fishing on the Sabbath. I suspected it was that they were fishing in local waters that were, to local fishermen, their own. Still the military had been called in.

After breakfast we walked to the High Street to report our success. The general merry atmosphere that attended our description

of the presentation and its reception can be imagined. We also returned the carbon copy of the report, my manuscript of the boards, and the portfolio case and pointer, and we asked Miss Hoskins to file these. Beyond this, our presence was a distraction from other work that was going on, so we did not remain long. Indeed, I wanted to go to the bank to deposit the cheque for the presentation that Smith had handed to us at the end of the previous day's proceedings.

As we left the bank, Amelia said "Richard, I feel at a loss now there is no direct body of work to undertake."

"Yes. There is a sense of not knowing what to do. On the other hand, thinking of how well you explained the line diagram yesterday suggests you might think of putting the ideas into a pamphlet, or perhaps a series of such short documents that could be collected into a small handbook. Something along the lines of *Presenting numerical information*, possibly with a suffix 'for Engineers', though that might limit the market. It may be that we could find some interest among publishers, and in any event it would codify the approach even for ourselves."

"That is an interesting idea, but I find it does not interest me today."

"Yes. We have an energy that will not allow of focus, I fear," I conceded.

"Precisely."

"Shall we get on the train to Sevenoaks, have some lunch, and visit Knole House. The showrooms there have been receiving visitors for at least two centuries."

"What a good idea. Can we make straight for the station?"

* * * * *

On Monday May 25 – the Whitsun Bank Holiday – we rose at our regular time so we could take the train to Tonbridge. The plan was to rent a rowboat with Maude and James and have a picnic lunch on the Medway, spend some time in the afternoon at Maude's house, then dine relatively early at the Chequers before coming home.

We walked to Central Station, and were in perfect time for our train, having to wait only 5 minutes. As the train started out into the north tunnel, Amelia said "I am a little concerned about Betty."

"Oh. Have I missed something?"

“She was sick twice in the last week during the morning. She said she thought she had eaten something, but as far as I know her meals come from the same pots as ours. I think she may be pregnant.”

“Really? Our Betty?”

“Richard. She has been with you since before my time. When did you hire her?”

“Geraldine engaged her in 1876. She was 18 I think.”

“And now she is 38. Not a great beauty, but a pleasant enough appearance, if I as a woman am any judge. She has mentioned going out on her afternoons off with a ‘friend’ who I took to be another woman, but perhaps she has been walking out with someone.”

I responded “Yes. I agree that she has a nice appearance. Tidy and neither skinny nor plump. She always keeps her clothes very neat. She is also good-natured. I can see how a man might enjoy her company.”

“Should we do or say anything?”

“That might depend first on whether her indisposition really is due to pregnancy and second on whether the man involved has a genuine affection for her. The righteous and upstanding members of society – I think Christ asked them pointedly to throw stones only if without sin – will pontificate and try to shame, but I believe church doctrine is that the man and woman make the marriage sacrament, which is then acknowledged and blessed by the priest and congregation.”

“How well you put that, Richard. And I agree with you that we need to ascertain if Betty is expecting and if so, whether the man will marry her. Of course, she should only marry if the man will treat her well. To do so for the sake of appearances but end up in a bad situation would be tragic. Look at Komarova. She seems happy Sergei has gone.”

“I doubt Betty has Komarova’s steely nature. But even Anna Komarova would, I suspect, prefer to have a more ordered disposition of her marriage.”

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It was nearly half past nine that evening when we came in. We were hanging up our raincoats, which we had not needed, when Betty put her head out from the kitchen.

“Ah. There you are sir, madam. I was hoping to talk to you before you retired if I may.”

“Certainly. Why don’t you bring us a cup of tea into the office?”

Amelia and I went into the office and lit the gas above the mantle-piece. After a couple of minutes, Betty came in with the tea tray, including some ginger biscuits, that particular weakness of mine.

“Now how can we help you, Betty?” I asked.

“Well, I’ve been working here twenty years, but now I want to hand in my notice.”

Betty looked extremely nervous.

“Have you been unhappy in our employ?”

“No. No. Not at all. You have been excellent and very kind employers. It’s just that I want to get married. Very soon.”

“Well, you are to be congratulated. We will wish you every happiness.”

“Are we to assume you do not wish to continue working? You know that Hilda used to live in, then married Mr. Parks and we altered how she worked with us.”

“I ... I don’t think I’ll be able to keep working.”

Amelia said, quite gently, “Betty. Are you expecting a baby?”

Betty turned very red and said “Yes. Mrs. Carr. I think I am.”

“You said you want to get married. So the man is not going to abandon you?” Amelia continued, her tone quiet and non-accusative.

“Oh, no. We’ve thought of marrying for some time, but haven’t worked out how we should make our life together. I ... I just feel so stupid. I’m thirty-eight and when I was younger had hoped to meet someone and marry and have a family, but it never happened. I thought I was too old to fall pregnant. We had a chance at Easter to go to Worthing for a couple of nights, and it was really special, even if we did have to pretend to be married. The first Mrs. Carr talked about going to Worthing when she was ill, but had still enjoyed it. And then I missed my monthlies a couple of weeks later.”

“And you’ve had morning sickness this last week?” Amelia said.

“Yes. It all points to my being up the spout.” Tears were running down her cheeks.

I said “If your gentleman wishes to marry you, it seems to me the only important questions are where and how you will live. If there is a reasonable way you can stay working for us, I am sure we

will be happy to try to arrange that. And a child, even a premature one, is surely to be celebrated and cherished.”

Amelia said “Indeed. Birth should be a happy event. You know I was a nurse and midwife, so I have seen a number of arrivals.”

Betty said “You’re not angry? Not going to throw me out?”

“What use would that accomplish?” I asked. “From a purely selfish perspective, we would be immediately without a good servant.”

“Oh. I hadn’t thought of looking at it like that. There’s just the usual stories and books where the woman is blamed and harangued and thrown onto the street in the middle of the night. We were so worried. William, my fellow, is waiting in the kitchen because we were fearful I might need his help if you threw me out.”

“Why don’t you fetch him and the bottle of sherry and we’ll toast your upcoming wedding?”

“Oh my. Yes, sir,” and she burst into tears and left the room.

A couple of minutes later she returned, now dry eyed, with a man of forty something in tow, holding his cap in his hands.

“Mr. and Mrs. Carr, the is William Cross, my intended.”

“Come in Mr. Cross, and let us toast your health and future happiness.”

“Thank you, sir. I feel so awkward. Never wanted to put Betty in a bad light.”

“Are you content with the idea of a new child?” Amelia asked.

“Oh yes. My daughter’s been a great joy to me. Especially so since her mother died. My first wife lived next door to Betty when they were kids. Then about five years ago, after Nora died, my round got changed and I started delivering the post here and met Betty again.”

“Ah, that’s why your face is familiar,” I said.

“Yes, I’m your postman.”

“Well, let us drink your health,” I said.

This we did, and it was clear that William and Betty were much relieved. Also that they clearly were attached to each other.

“So I can stay on here until I’m married?” Betty asked after a short silence.

“Of course,” Amelia said. “It is likely that we need to discuss what happens afterwards. As you know, Hilda has been working here since she married. You may recall that from time to time she

even slept here. I recall once so you could be away for a funeral. I don't see why a similar arrangement cannot be worked out. That is, assuming that Mr. Cross is not assigned to another town."

"I don't think the Post Office will ask me to move," William said. "From time to time the routes are revised, but rare that we're asked to transfer to another town. But we'll probably have to look for new lodgings. Joan and I have just one room off the Camden Road. With a new baby and a new wife, it'll be a bit small. With Nora, we lived with her mother, then the old lady died, then Nora got sick a couple of years later. Joan was too small to be in the house alone, and I knew a cousin and her husband who live where we are now, and they minded Joan when I couldn't be there due to work."

"Well, Betty has a place here until you are ready to set up together."

"We'd better get the vicar to call the banns soon, Betty. The tongues will wag anyway, but we might as well not have Jubilee Day flags. But now I'd better say goodnight and a sincere thank you to Mr. and Mrs. Carr."

"I'll see you out, Bill," Betty said.

* * * * *

Reorganization



The uncertainty and lack of focus that attended our completion of the safety review and the presentation continued, at least for Amelia and I, through the months of June and July, 1896. That did not mean we were idle, nor that we failed to accomplish anything.

There were, of course, some loose ends from our activities during the six months of the safety review. We got a letter June 1 from Nesbitt, saying he would come to Tunbridge Wells on Friday, June 5, to confirm statements all of us had made in order to file them in case any of the convictions or sentences were appealed.

He arrived at around quarter past 10, and we had already invited Roger to be present. After the greetings, Nesbitt said "I have had copies of your statements typed, and have carbon copies for you, but the lawyers have suggested we get you to verify and sign these for filing. We don't expect there to be any appeals, but one never knows."

Betty brought in tea and biscuits and there was silence for about a quarter of an hour while we read the documents carefully. We then signed them and gave the appropriate copies to Nesbitt.

I asked "Has there been any development in identifying the source of information about the courier's missions?"

"Actually, yes. Because Wardle had taken the role of convincing the courier to leave his seat and so forth, and the courier was willing to testify to that, Wardle could be charged with contributing to the attempted robbery. Wardle used his actual identity as an MP and gave the man his card. Moreover, Wardle had made a point of meeting Crockett at his offices, knowing that the couriers used were actually clerks there. Thus the courier had seen Wardle before, but had not, of course, been told anything of why he came to meet Crockett. In fact, the meeting with Crockett was conjured up solely to have Wardle be seen with him by the couriers. Some sort of story was given to Crockett that the government was worried about the transfer of securities. A total kettle of fish, but it served the purposes of Mott and Wardle. We don't think they got anything other than very general information out of that meeting.

More recently, indeed after the events of April 17, we found out that Mott knew a young woman he could, shall we say, encourage to give him information. She was a maid with the family of one of the clerks. We think Mott may have had a hand in sending her there. She was to inform Mott whenever the clerk packed a valise. That was how they knew when something was happening. As far as we can tell, they gleaned the destination from the courier himself mentioning where he had been when he met friends for a drink. And the destination was almost always Edinburgh or Aberdeen, the

former for Scottish banks, the latter for transfer to another courier to take the valuables to Scandinavia.”

“So the criminals used wile and intelligence to discern the information they wanted?” I said, more as a comment than a question.

“Indeed, that was the case. The young woman has been cautioned, but I doubt she will be charged, as it is fairly clear Mott was menacing her in some way, and she has no known connections to crime otherwise.”

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The end of the safety review and its presentation did not mean that the consultancy was idle. We had a number of modest commissions for different calculations and requests for opinions on designs that kept Roger Parks and Victor Crane busy and in turn Komarova and her two or three computational assistants. My own involvement was rather hit and miss, as I had been out of the regular stream of our work for a time. Still, the material strength tables looked to be evolving into a steady activity that generated modest but reliable revenues.

By June 1896, there was steady correspondence and Roger and I decided to put Gus in charge of that project. He had already indicated his willingness, and, as I have mentioned, he had begun a card box for our wish list. We asked Miss Hoskins to do the organization of that project, and she soon had the correspondence and the planning of new editions in hand. Amelia was going to put her efforts to writing the pamphlet material – or was it an incipient book – on the statistical diagrams.

Miss Hoskins worked well with us all. In that there were tasks for her in a number of our activities, as well as handling the telephone, there was a danger she would have too many people telling her what to do, and Roger mentioned this to me around the time of Nesbitt’s visit. We had a quiet discussion and decided that we would raise the matter at morning tea break on Monday June 8.

Roger said “Miss Hoskins, Mr. Carr and I have realized there could be a danger that you will find that all of us ask you to do things for us, as well as the telephone demanding your attention. After some deliberation, we wonder if we should try to make you the arbiter of your own activities. That is, we will ask you to organize

the pattern of your own work so that we do not pull you in multiple directions at once.”

“Would there not be upset if I chose to work on something that seemed less urgent?”

I said “We will hope that you will be direct with us in asking the relative urgency or importance of different work, but I suspect you already are acquiring a reasonable sense of that.”

“Yes, I see the commissions and know more or less the times of delivery. And the tables of material strength are an ongoing matter that can be moved about a little. I would worry if we get a crush of work.”

Roger said “We hope you will tell us as early as possible, so that we can adapt what we are doing, or try to find more resources. We do not expect perfection. Our concern is that you not find yourself like the shuttle in a loom going from one thing to another and unable to finish any.”

“Let us try and see,” Miss Hoskins said. “I am used to keeping a log, and will do so. Then we can review in a fortnight and try to perceive the successes and failures.”

Gus said “Let us be optimistic and say ‘triumphs’ and ‘mere successes’” and we all laughed.

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By the end of June, we had made a few minor adjustments to this plan. Miss Hoskins found some wire baskets which were suitable to hold sheets of paper or similar items. These we built into a pair of stacks on her desk with different labels. The incoming post went in one, outgoing in another. Letters to type went in another, longer reports in another, while items for the tables in yet one more. Miss Hoskins spent quite a large proportion of her time at the typewriter behind the door of the apartment, to which Gus and Crane had added a flange and some felt, as well as a draught barrier on the bottom. This muffled the sound of the typewriter considerably.

Gus took up the small desk by the door with the telephone, and became *de facto* the voice of our firm. While most engineering firms were moving to have a young woman answer the telephone, our use of Gus to respond to the telephone was, we realized, more efficient when there were enquiries of a technical nature. In our small

team, Gus generally knew the projects that were ongoing, and our teatime chat gave him a working knowledge of the state of progress on different commissions. Later on I received a couple of informal comments that getting a quick answer to queries without having to wait to be passed to someone who might be able to assist was much appreciated.

Crane took Miss Hoskins to talk to cousin Henry and acquired a bicycle for her in early July. She learned to ride quite easily as I learned later. This gave her more flexible transport around town. Despite her bereavement, her demeanour and even her appearance were brighter. We learned that she had been born late in 1860, so was younger than we first estimated.

Gus and Crane did some refurbishment of the shed behind the High Street office allowing two bicycles to be hung on the walls and two more to be held upright, though it was rather crowded when fully utilized. Still, it kept the bicycles dry and secure.

* * * * *

On July 5, Roger and Hilda Parks had invited Amelia and I to spend the afternoon with them and have 'tea' – the evening meal – with them. Over the recent years I found myself often bemused and perhaps confused by the naming of meals and the influence of social class on usage. This was particularly so given that I moved across class boundaries. Roger had been the son of a solicitor in Hildborough and solidly middle class, though as a nonconformist was likely to have associated with many of more modest fortunes. And Hilda, of course, had come to Geraldine and I from the Workhouse. Thus 'tea' was closer to the 'dinner' of an upper middle class or aristocratic household. As I have elsewhere observed, Amelia and I are imposters to the upper middle class. Amelia's father was a school teacher. My parents ran an ironmongery. But now, of course, we have dined with the knighted Chairman of the North East Railway. Where do we belong?

These thoughts flowed when we received the invitation – by telephone as it turned out, and our first such social invitation by the medium of that instrument. They were not in my mind when we walked through the Grove to the Parks house that they had bought a few years before just off Claremont Road. It was a fairly standard

house, a bit smaller than our own, and had really no front garden, just a flower bed. The back yard was also smaller, but Roger and Hilda had made it homey with flowers and a small area of grass.

Given the weather, they had set some chairs and stools outside into which we settled.

Hilda said "The children have gone up to the commons. Of course, David is eighteen now and a young man. You know he's working for a while with Kirkaldy and seems to be having such a good time that it probably doesn't seem like work to him. You'll see them all at tea. I warned them to be back by five o'clock."

Just then a young woman of perhaps 14 came out with a tray of lemonade and some bowls of salted nuts. Hilda continued,

"This is Joan Cross. She's come to work for us."

Amelia said "Oh. You are William's daughter."

"Yes, Ma'am. Dad and Betty were fussing about there not being enough space, and I told 'em I'd be finishing school now, so I could go to work. They weren't keen on me going somewhere strange, then Mrs. Parks sent for me and asked if I'd like to come here. It's all worked out special-like."

"We had a bit of a discussion to make sure Joan didn't feel she was being pushed out," Hilda said.

Joan jumped in and said "I really like Betty, and she's good for Dad, but three in a room wouldn't be right. And they'd have to fuss around to find another place as economical and has Auntie Kath and her mob in the house – no strangers."

We each took a lemonade and Joan disappeared back into the house. After they had finished their lemonade, so did Amelia and Hilda. Apparently, Roger had been more than happy to let Hilda go to Madame Levoisier so there was a new dress, or maybe more. I had been a married man a long time, and knew it was not my place to ask, but to wait to be told.

Joan came out to collect the glasses, and Roger said in a low voice "Joan, would you bring us each a bottle of the ale that is in the pantry."

"Yes. Mr. Parks. Would you like glasses?"

Roger mumbled his assent, and in a minute or so, Joan returned with the bottles and glasses. She seemed awkward, then said "I wasn't sure if I should open them, Mr Parks."

"We'll manage them, Joan. Thank you."

After Joan left, we opened our bottles of ale by unscrewing the cap. It was not so long before that bottles had all been corked – much harder to open.

Roger said “Do you think Victor and Gus will stay with us? Or perhaps even should stay with us?”

“I’ve probably been preoccupied with the safety review and not noticed that they may have ambitions to advance in their careers. You know me well enough that you will realize that I want our men – and women – to do well. And I’d rather they did well with us.”

“That was what I would expect you to say, Richard. You made me a partner at a time I was actually somewhat unsure of myself, and wondering if I should, like you did, seek a challenge at the frontier, so to speak. But the demands of being a partner forced me to take more responsibility.”

I asked “Do you think our arrangement was equitable?”

“Actually, I rather doubt any other consultancy would have been so generous to a young engineer. I hope you feel you got fair value.”

“Of course. And you,” I said.

“Absolutely. I believe that this year I could buy the last portion of the equity so our partnership shares are each 50 %. Yet I cannot recall any situation where you imposed your controlling interest when we discussed the direction to take the firm.”

“If we admit Victor and Gus as partners, what should we give as the base share?” I asked. I had given Roger 20% as his initial share. However, that was some time ago, before Geraldine died, but indeed when she was dying. That was likely in my mind when I offered Roger a partnership, since I knew my time would be occupied with taking care of my wife. As my partner, Roger took over some of my work and eased my workload. And perhaps more importantly, he took over a lot of the weight of decisions about what work to take on, how we would do it, and by which date we would deliver whatever was agreed.

I was so diverted with these reminiscences that I almost missed what Roger said next.

“In retrospect, I think the 20% you gave me was astoundingly generous, though I am now experienced enough in life to realize you were at a moment of some extremity with Geraldine’s illness and needed me to take on a much bigger part of the management of the firm, more than we would ask of Victor or Gus.”

“Have you a suggestion, even a crude one, of how we should proceed?” I asked.

“Actually, today I just wanted to make sure we would be of similar opinion. Otherwise we would have to take a different direction. But, and this is just from the top of my head, I think something around 5%, with option to buy 1% of the evaluated equity per year from us, up to a limit of 25%. Should I complete my 50% before we make the offer to the others?”

“Why don’t you write up the proposal – we need to have a clear statement of our arrangements anyway? There is always the risk in the future of some discord, or even the reality of illness and death, in which case there may be a need to show some exactitude to buy out a widow or child of the share. Unless, of course, we craft an agreement where the shares are distributed to the surviving partners according to their holdings.”

Roger said “Paying the widow is more fair to the families of the partners, while distribution to the partners avoids causing the business to fail.”

“Our own arrangement is deficient in that respect. I don’t think we have a proper prescription of how Amelia or Hilda would have an income. Would it make sense to say that when a partner leaves the firm for any reason, then that partner’s right of voting is distributed over the other partners according to their holdings, but the valuation of the share is calculated and paid out in some number of payments at intervals for several years.”

Roger asked “You mean like a fifth of the total amount at the end of each of five years?”

“That is a reasonable example. We need to prescribe a fair payment, but not bleed the firm of operating funds.”

“I’ll make sure to have something for you to read for discussion later this week. I think it means having different voting rights from ownership of the capital.”

I added “Yes, that would make it less awkward to talk about how much to pay out. And we should bring our valuation of the firm up to date and see if it is reasonable for you to complete your half of the firm before we offer to the others. It isn’t impossible to work with a more general ownership share, and no doubt in future we will have to. It may also be that one of Victor or Gus will not wish to be a partner.”

Roger said "Yes, there are a number of possibilities. This is getting complicated! And I wanted to ask how we should recompense Amelia. She handles quite a few odds and ends, and especially the table preparation, and of course the presentation of the diagrams."

"We should establish that in writing too. For work of the same nature as Miss Hoskins, we could simply pay at the same general rate, apportioned as to time. For the pamphlets and possible lectures thereon, perhaps the easiest way is to let Amelia reimburse the firm for costs or work done, and she takes the revenue. It would be at her – actually her and my – risk, but the amounts are likely to be very modest. The major risk is loss of time and effort."

"Yes. That would be reasonable, and we have been talking with Miss Hoskins about work for other firms, so we should have a schedule of rates to use," Roger answered.

"Well, see what you can put together. We need to get it right. It might be useful, important even, to ask Jessop to take a look. I think Jeremiah retired recently, but he had brought in his son to take over."

"In case you are not aware, Richard, Hilda and I are deeply in your debt. Thank you. And not just for today. For everything."

* * * * *

Near the end of July, Hilda brought in our morning tea and along with it a letter she had received from Ethel Petch.

(Edmonton Trail)
Calgary, North West Territories
Canada

June 20, 1896

Mrs. Hilda Parks
Tunbridge Wells

Dear Hilda,

I imagine this will take a few weeks to reach you, but I wanted to let you know that we are all well and learning

about our new home here in Canada. Thank you for your help, and Mr. Carr too.

Our journey was long, but we rather enjoyed it. We had a cabin to ourselves. A lot of people were in steerage and families separated. The food on the ship was very good, and a man the Railway had meet us in Montreal helped us buy things for the train, as there were long stretches with nothing but trees and rocks. Andy said for variety there were rocks and trees, and that's the truth. Then the prairies. We could hardly believe how they went on to the sky.

Our friend in Calgary helped us find a place to live. We're on the north side of the River, not far from the Dewdney bridge. It's actually outside the town of Calgary itself, in a village called Germantown. It is a bit on the rough side, but quite cheap. I'm afraid some of the women who live nearby ply an ancient trade, but they generally want to be left alone, and give us no trouble, and even have brought honest work to us.

We have the upstairs of a tack shop that is associated with a livery stable. Andy has a job there, but horse and cart rather than a pony. A big old mare of suspect origins, but Andy says she's good natured though she only will go at a slow walk.

Mary and I are doing odd jobs of mending and sewing, cleaning and cooking. Some laundry, though the chinamen who came to build the railways here have taken that business over, and we're not going to try to compete. Actually, I started talking to one of the men in a laundry. Took me a while to understand him. Some of the locals won't talk to them and treat them badly, but it turned out that simply being courteous got us some work. The laundry recommends us for mending and darning, and we tell people they are reliable for

washing, which they are. Really work hard. The law here makes it difficult for them to bring their women to live.

Of course, there are more men than women. Mary got the idea to offer cooked dinners. We sell tickets in advance so we know how much to cook and so we can fit them at the table. We are sure there are a couple of men who are showing interest in us as much as the meals. Well, we'll see if they are good men or 'just men!' as we sometimes used to say.

All in all, we think we are doing well so far. People warn us about the winter, when it will be very cold. We'll make sure we are prepared.

Do write and tell us how things are going with you. It will be good to hear something of England, now so far away. But I think we are going to be happy here, and the children have a bright future.

Your friend,

Ethel Petch

* * * * *

Epilogue



Roger and I sorted out the partnership arrangements as well as those concerning Amelia's work, and at the end of August we offered Gus and Victor partnerships, starting with a 5% vote and allowing them to buy equity in the firm. The firm itself has not had any particularly remarkable commissions, but we have had a steady and gradually increasing flow, I believe due to our role in the material strength tables. Amelia has completed a couple of small pamphlets and was invited to present a lecture to the Institute of Civil Engineers on the statistical tables. There are some negotiations to give another couple in the next few months.

Betty had married late in June and moved to the rooms William Cross already had, but she came to us most days up until after Christmas. She will return on a reduced basis after her child is safely delivered and thriving.

We had recognized that we really did not have great need of Hilda with both Betty and cook, but arranged that she would now come one morning or afternoon a week to help with the household management. We are fairly sure cook has difficulty with reading and arithmetic. Betty may take on more of the household management in the future and we could look to find a new maid. However, we have found that if there are things needing to be done such as heavy cleaning, we share Joan with Hilda, and on one occasion Betty has gone to the Parks to help out. It is easier to have people we know in the house.

Amelia and I finally took ten days in Paris in September. Amelia had, to my joy and surprise, been taking some lessons to refresh her French, which she had not used since her days as a governess. My own French was quite rusty, as I had not used it since we went to Canada together. And the dialect I knew best was that of Quebec.

Still, we managed and had a very good time. Of course, Eiffel's famous tower was an important part of our visit. What is so difficult to get into one's mind is that if the tower were wrapped in an impervious membrane, the air inside would weigh more than all the iron in the tower structure. Amazing that it has such strength with so little mass.

I have mentioned that Victor Crane was a very quiet fellow. Indeed, apart from his work, Roger and I had little knowledge of his personal interests. However, now that he is lodging at Miss Hoskins house, small nuggets of information get dropped over our morning or afternoon tea in the High Street office. And it turns out both Crane and Miss Hoskins are avid bird watchers. Now free from the financial depredations of Mrs. Westlake and the oppression of her mother's illness, she has acquired a more robust and happy appearance. The natural effects of common living arrangements and shared outdoor perambulations in search of birds have, according to our resident philosopher Gus, been the inevitable cause of banns being called for Saturday January 2, 1897. We will wish them luck and happiness.

A local event of this year of 1896 became a much more widely publicized one. Mr Walter Arnold of Paddock Wood acquired a Benz automobile in late 1895 and on 28 Jan 1896 he drove through the village at 8 mph, violating the limit of 2 mph. He was chased by a policeman and charged under the Locomotives Act. Arnold pled not guilty on the basis that an internal combustion vehicle was not the subject of the Act. However, the magistrate fined him a total of £ 4 7s on 30 Jan 1896 in the Tunbridge Wells court. There were four summonses against the defendant — namely, that the vehicle was not worked according to the Locomotives Act, which requires that at least three persons shall be employed to drive it, and that one shall precede it when in motion; that the name and residence of the owner were not affixed to the carriage; that the speed exceeded two miles and hour; and that no license had been obtained.

The Locomotives Act had become a severe limitation on the growth of an industry to design and construct internal combustion powered vehicles. The government was sensible enough to see this, and has now abolished the person walking ahead, who until 1878 had to carry a red flag. The requirement for a 'fireman' or 'stoker' is also gone and the speed limit is now 14 miles per hour.

On November 14 we had a great spectacle of the Emancipation Run, with a number of automobiles trying to get from London to Brighton, which indeed several managed to do, though not without adventures and misadventures. Indeed, I am not convinced that the rush to action is not premature, as the various outcomes are not persuasive that internal combustion vehicles are ready for common use on our roads. They will certainly come into such usage, but not until a number of deficiencies are corrected.

On the other hand, I must confess to being frightfully eager to have such a vehicle, and Amelia has said she thought that it was unfortunate that there were no women drivers, when in August 1888 Bertha Benz had driven from Mannheim to Pforzheim with her two teenage sons in a single day, a distance of some 66 miles. Since she had not told her husband about this expedition, the first long distance automobile excursion, she telegraphed him that she and their sons were with her mother for the night. She drove back as well, Amelia pointed out. When I asked if she thought she would like to try driving an automobile, I got a reply "Of course," delivered in a tone suggesting that her interest was something a husband should have known without asking.

Given that my wife will not be haranguing me for spending all my time with a greasy machine – indeed she will likely be wielding a spanner – I must look to see if there is a nearby shed or workshop we can let to permit us to seriously consider acquiring such a vehicle.