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BETWEEN:  
 HER MAJESTY THE QUEEN ..... PLAINTIFF;  
 AND  
 CANADIAN PACIFIC RAILWAY }  
 COMPANY ..... } DEFENDANT.

*Crown—Information—Common carrier—Breach of contract for carriage of goods—Derailment of train by mud slide—Act of God—Nature of plea of act of God—Duty of railway company to guard against mud slide—Negligence—Damages.*

In this action the plaintiff claims damages for breach of a contract for the carriage of a quantity of wheat owned by the plaintiff, under the terms of which contract the defendant was to deliver the wheat to Vancouver, British Columbia, but failed to do so because the wheat was lost when the defendant's train carrying the wheat was derailed and wrecked when it collided with a mud slide covering a part of the defendant's track in the Revelstoke section in the Rocky Mountains at about 8:30 p.m. on May 11, 1961.

The evidence established that the mud slide was first detected by the train crew at a distance of about 300 feet but that, at the speed of the train at the time, 29 m.p.h., its emergency stopping distance would be 1,062 feet. The mud slide was 8 or 10 feet deep and about 100 feet in length. The evidence also established that about three hours before the collision a train had safely gone through the area of the collision, and that earlier on the same day the defendant's divisional engineer, its assistant roadmaster, a roadmaster and then its regional maintenance crew all passed along this section of track at different times.

The defendant pleaded act of God by way of defence.

*Held:* That the plea of act of God, being a plea of an exculpatory nature, it is necessarily an extreme one which must evince most if not all of the characteristic traits predicated of it. Otherwise, the expression, act of God, becomes a self-serving synonym for the negligent inaction of man.

2. That 100 feet or so from the tracks, at the point of the derailment, a watchful eye would have detected the unmistakable proof of past trouble, a pile of debris, also an ill omen of future danger.
3. That the defendant was duty bound to undertake, at regular intervals, a check by aerial photography of the "dangerous" and "potentially dangerous" mountain zones near its track. The defendant's line men, foremen and roadmasters should have occasionally left the track and

walked up the stream beds a certain distance at points opposite its bridges and culverts.

- 4. That even a cursory look at the heaps of debris at the location of the mud slide in question before it occurred would have put a knowledgeable person on inquiry.
- 5. That what was done by the defendant to prevent a derailment such as occurred in this case is well, but falls short of the entire fulfilment of its obligations as a common carrier under the circumstances.
- 6. That the plaintiff's claim is allowed.

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INFORMATION by the Crown to recover damages for the loss of wheat as a result of a train wreck.

The action was tried by the Honourable Mr. Justice Dumoulin at Victoria.

*H. B. Monk, Q.C.* and *R. W. Law* for plaintiff.

*F. E. Dent* and *A. G. Graham* for defendant.

The facts and questions of law raised are stated in the reasons for judgment.

DUMOULIN J. now (February 25, 1965) delivered the following judgment:

It is admitted in the defendant's pleadings (Statement of Defence, paras. 1 and 5) and in a Statement of Agreed Facts that, on May 11, 1961, at Mile 116.5 of the Canadian Pacific Railway's Mountain Subdivision, Province of British Columbia, one of its trains, number 73, composed of 4 Diesel locomotives, 61 loaded boxcars and 7 unloaded ones, was wrecked, at about 8:30 p.m., as a result of a mud slide.

The impact had caused the derailment of the engines and of 18 boxcars loaded with wheat "to all intents and at all times material to this action the property of Her Majesty the Queen in right of Canada". An equally agreed fact is that a quantity of wheat in the sum of \$46,199.95 was spoiled and lost in consequence of the wreck, and, therefore, never reached its destination, the City of Vancouver.

Plaintiff lays to defendant's charge a breach of duty in omitting to safely or securely carry this consignment to the above Pacific sea port, whilst the Company says "that the wreck and the consequent damage to the said wheat was the result of an act of God".

An offer of \$364, monetary value of some salvaged grain, was refused by the plaintiff.

Clause 4 of the Statement of Agreed Facts acknowledges that:

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4. There was issued by the Defendant and received by the Crown or its agents a Bill of Lading in the New Form 717 (filed as exhibit 1) in respect of each car referred to in the information whereby the Defendant acknowledged receipt of the grain and grade referred to as being shipped in that car and agreed to transport such grain and deliver the grain to agents of the Crown at Vancouver upon the terms and conditions set forth in the Bill of Lading.

Those pertinent "terms and conditions" are mainly set out in section 1 and the two first lines of section 3, hereunder quoted, the remaining conditions being only incidental in exhibit 1:

Sec. 1. The carrier of the bulk grain herein described shall be liable for any loss thereof or damage thereto except as hereinafter provided.

Sec. 2. . . .

Sec. 3. The carrier shall not be liable for loss, damage or delay to the bulk grain herein described, caused by the Act of God . . .

As aforesaid, around dusk, the time, 8:30 in the evening of May 11, 1961, the trainman, Douglas Moore, of Revelstoke, B.C., in charge of train 73, was seated in the cab of the leading Diesel Electric Unit Locomotive, to the right of the engineer, C. O. Paul, this latter having at his left fireman T. A. Utheala.

At a distance of some 300 feet, Moore detected a mud slide, mud and rocks, that a curve in the roadway had prevented him from seeing before. He, at once, cried: "Slide!", whereupon the brakes were applied but "with very little effect" reports Douglas Moore, whose warning yell had been duplicated by fireman Utheala. The brakes, tested at Albert's Canyon, 12 miles back, were in good order, but at a travelling speed of 29 miles per hour, indicated on the speedometer, "the emergency appliance in so short a distance, 250 feet from the mud pile, did not and could not slow up the train in any appreciable way", testifies the engineer, C. O. Paul, whose connection with the company dates back to 1936. This witness remembers it was twilight with good visibility and fair weather.

Bruce MacDuff, supervisor of air brake equipment for the C.P.R., performed tests on a train of equal weight to that of number 73, namely 5283 tons, running along a 1% descending grade. The emergency stopping distance of such a train, at 29 m.p.h., would be 1,062 feet. To stop such a mass within 238 feet, the Divisional Engineer, A. F. Joplin having set in his evidence a distance of 236 feet as the point whence the engine driver could first notice danger ahead,

the train's speed would have to be no more than 13 m.p.h. Had the "normal brakes" not been settled at 30 m.p.h., then 200 additional feet, 1,262 in all, would be required. Douglas Moore is positive the train could not come to a full stop in a lesser run than 1,000 feet.

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Colliding against this flow of mud, rocks and rubble, approximately 8 or 10 feet deep and about 100 feet in length, toppled the engine and eighteen cars off the rails. Dumoulin J.

"A warning Page wire fence, automatically flashing a danger signal when under pressure, was installed alongside the track some days after", testifies the trainmen. This protective device appears on photo 16 of exhibit no. 3.

The engine driver, C. O. Paul, a fireman on the first section of train no. 73, Hans Hendrickson, and the Divisional Engineer, Albert F. Poplin, asserted they had never heard of previous trouble at Mile 116.5.

On the day of the accident, May 11, one Istvan Dugar, a C.P.R. machine operator, was temporary section foreman along a six-mile stretch, patrolling tracks and inspecting culverts. He went by point 116.5 at 15:30 hrs. (3:30 p.m.); everything seemed in perfect condition.

Dugar drew drinking water from the mountain freshet flowing through the culvert. The weather was clear. The witness and his crew of two men "tarried about six minutes at that spot".

After the slide, Dugar with his companions rebuilt the track, substituting a rectangular culvert to the erstwhile round one, and they also set up the electric warning fence.

Frank Minifie, the company's roadmaster between Green Mountain and Revelstoke, a distance of 61 miles, supervises every section foreman in that sector who all report to him. Minifie has charge of the care, safety and maintenance of rails and culverts over his territory, with the help of two assistant roadmasters.

Their inspections, made every day in the week and often of a Sunday, is done by "track motor" or on board regular trains. Each road foreman must inspect every foot of roadway assigned to him. On May 11, roadmaster Minifie passed point 116.5 "in his usual manner at 16:10 hrs. (4:10 p.m.) in clear weather; there was nothing untoward there at all. Whenever something seems out of order, it is immediately investigated and traced to its origin", notes the witness.

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Since no rain had fallen that day nor for some time, there was no apparent reason to anticipate trouble. The stream was not discoloured and carried no debris towards the culvert, four feet high and eight wide, "six times too large", which had been cleared the previous March.

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One hour after the accident, at 9:30 p.m., the roadmaster reached Mile 116.5. Under cross-examination by Mr. Henry B. Monk, Q.C., the witness agreed that "no steps are taken to discover areas of potential slides". When, at 4:10 p.m., that afternoon, he went past 116.5, he was travelling at 20 m.p.h. on a track motor and "paid no particular attention to water running there".

A few days later, tracking the path of the disturbance half a mile up the mountain flank, he observed traces of other slides that blocked the stream and altered its former course. Mr. Minifie's concluding words were: "It does rain in that region".

Next to enter the witness box was Albert Frederick Joplin, civil engineer by profession, defendant's divisional engineer for the Revelstoke section which includes Mileage 116.5. All structures in that division: stations, rails, culverts, bridges, etc., are under his supervision and that of an engineering staff working with him. An assistant roadmaster oversees the sector daily. "Twice yearly at least", says Mr. Joplin, "I must inspect everything on which the safety of trains depends". "Prior to May, 1961, the culvert was examined by the roadmaster and road foreman and cleaning operations undergone in March, same year."

Telltale signs of danger would be excess or shrinkage of water, discolouration of the flow, debris rolling down, trees withering, any unusual happening.

According to the witness "the Spring of 1961 was an easy one, the main water run-off had already occurred by May 11, the weather persisting generally fair during the period immediately preceding".

Around 17:30 (5:30 p.m.) or 3 hours before the "affair", a train had gone by safely at Mileage 116.5. Joplin himself passed there at 14:30 (2:30 p.m.) on the fateful day. So did the assistant roadmaster at the same time, then a roadmaster at 15:55 (3:55 p.m.) and the regional maintenance crew at 16:10 (4:10 p.m.). Finally, by 17:30 (5:30 p.m.) the first section of freight train 73 negotiated the curve.

At 9:30 p.m. the divisional engineer, told of the washout, reached the scene and measuring as best he could the mud slide, estimated it was 120 feet long and 5 feet thick at its deepest point. The track, completely torn up, had to be replaced practically where it lay before.

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A month after the derailment, engineer Joplin climbed up the creek meadow to a spot where, in his opinion, the trouble had originated, some 2,500 feet above the track. Letter X on photo, exhibit R, filed by the witness, identifies the origin of the mud slide, about three quarters of a mile from the railway.

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In reply to plaintiff's counsel, Joplin insists he ignores the cause of the accident and noticed nothing in the vicinity that called for special precautions. Yet, in spite of this assertion, he must admit "that he considered potential sources of danger could arise in that region", but took no particular preventive steps in relation to Mile 116.5.

Soon after May 11, the embankment alongside the rails was lowered with a bulldozer as appears on exhibit B. "A very costly derailment", concludes the engineer, "19 cars swept off the tracks".

I would pause a moment in order to record my impression of this evidence. It goes without saying that a thin band of steel, snaking through possibly the most precipitous mountain range on the Continent, wriggles under a constant menace from above and not from the ground. Diligent watch of the tracks, culverts and bridges, is, of course, imperative, precisely on account of the multitudinous perils: avalanches, diluvial rains, rock slides, mud slides, tumbling boulders, liable, most of them, at a moment's notice, to crash upon the line, which, therefore, stands as a passive recipient and very seldom is the initial cause of disasters.

The Assistant Regional Engineer for the C.P.R.'s Pacific Region, at the material time, a professional engineer himself, Mr. Roy Arnold Swanson, was the next witness heard. The following lines summarize his testimony. Between Field and Revelstoke, for the last 78 years, the railroad has wended its course. "Avalanches, and rock falls, are the main troubles we encounter with, also, mud slides and sewer blockages, owing to excessive rains". Patrolmen on "speeders" or on velocipedes keep watching the tracks whenever rock falls are feared. Within the 10 years preceding, the company may

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have spent \$2,750,000 on rock sheds, tunnels or soil protection, a yearly average of \$275,000.

I interrupt the résumé to remark that annual expenditures of \$275,000, in connection with a 500-mile penetration, or thereabouts, through the Rockies do not conjure up a staggering figure.

Swanson, subsequently to May 11, 1961, walked along the creek bed to an elevation of 1400 feet, and, by helicopter, flew over the so-called alpine meadow, supposedly the stream's drainage basin, two or three thousand feet higher. "It is", claims the witness, "a typical mountain stream of small size, and photograph exhibit 'O' reveals the drainage area at this creek's source. By no means is it one of the largest streams in the region. The heavy run-off had pretty well occurred 8 or 10 days before".

Occasionally, the C.P.R. makes use of soil mechanics where "cracks or other signs of movement appear". "From climatic conditions persisting on or about May 11, nothing unusual could be apprehended. Photos 'Q' and 'R' indicate traces of old slides. Generally speaking," reports Mr. Swanson, "that area had not given us too much trouble from up above". His closing declaration, when cross-examined, was that the company "never drew up an over-all program of precautions to prevent mud slides".

The evidence of Mr. Leslie R. Smith, Vice-President and General Manager, Pacific Region, affords a repetition of Mr. Swanson's testimony, save for the over-optimistic claim that "We did not experience such a slide anywhere before, not even in 1940 which was our worst water difficulty". This executive official, momentarily forgets the several mentions of an identical mud flow taking place not so far away, at Mileage 86.7 on June 24, 1958, that also toppled off the tracks the 4 diesel engines and 10 cars of a wheat convoy. This accident ultimately formed the subject matter of suit no. 153946 in the Exchequer Court of Canada, *Her Majesty the Queen and Canadian Pacific Railway*<sup>1</sup> Honourable Mr. Justice Kearney allowed plaintiff's action for the full amount, \$32,655.12.

The witness declares that soil mechanics were utilized "to stabilize curves in the line, for bridges and buildings".

<sup>1</sup> [1965] 1 Ex. C.R. 145.

Plaintiff's counsel elicited from Mr. Smith these declarations, two of them at least, not devoid of ambiguity: "*So far as our records show no slide of that nature ever happened at Mileage 116.5*" and, later, "*Some slides or terrain slipping did occur in this area*".

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The total cost of the 1961 derailment, including repairs to locomotives, to 18 cars, and replacement of signalling apparatus, amounted to \$130,000. Then came this final admission: "*The risk of running into any kind of obstruction on our tracks has been considerably reduced by the precautionary measures employed. Under such conditions, the Company is willing to face that risk.*"

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Most, if not all, of those "precautionary measures" seem decidedly compressed within a too passive policy of "wait and see". I have expressed above my opinion about the insufficiency of limiting protective steps to a daily patrol of the tracks, when the imminent peril looms above. "*Causa sublata, tollitur effectus*: Suppress the cause, consequences disappear", would be a sound maxim to apply.

My allusion, *supra*, to a momentary forgetfulness was obviated later on, Mr. Swanson now remembering that "since 1958, only two major slides, including that of 1961, occurred in this region".

Two other witnesses closed the roster of factual deponents, as contrasted with the technical experts; they were Messrs. Leonard George Reichart, assistant Chief Engineer of the Great Northern Ry. Company, with head office at Seattle, Washington, and Edgar Stuart English, the Canadian National Railway's regional engineer for British Columbia and the entire Rocky Mountain section. Both these gentlemen, having heard the evidence so far adduced, stamped with their approval the recital of the defendant's safeguarding methods.

With the slight reservation that, usually, "the blade bears witness to the hilt", these top railway officials' corroboration of their colleagues' prudence raises a double question mark: are conditions in the hills of Washington State comparable to those obtaining around Mile 116.5? and next, did not the Canadian National Railways recently retain Doctor Hardy's services for a thorough survey of a hundred mile stretch of mountainous ground?



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Thus comes to a close the first stage of the case, consisting in a recital of the material incidents surrounding the mishap, and a mention of the daily care, inspection and general supervision, exercised by the railroad authorities, permanent way-men and roadmasters, specifically, for our requirements, over a 61-mile expanse of track, between Green Mountain and Revelstoke.

A second chapter will show, pitted one against the other, two highly reputed engineers, upon whose expert technical knowledge the litigants largely pinned their hopes.

The scientific notions expounded and natural laws at play, to be meaningful, require the assistance of numerous citations, a course of action I unhesitatingly adopted.

Dr. Robert MacDonald Hardy, specializing in soil mechanics and foundation engineering, appeared on behalf of the defendant.

In his opinion, "the slide that over-topped the railroad and caused the derailment was the result of a blockage that occurred up the stream bed about three quarters of a mile from the railroad". (trans. p. 6).

The present stream bed cut its way through the slope after an older one had become clogged by soil slipping, of much more substantial proportions.

The witness, having at hand exhibit "R", an aerial photo taken July 30, 1961, describes the local topography:

Now between A and X on exhibit R . . . it is roughly 3,000 feet, that is, from the junction of the old and the new channel . . . The sides of the creek valley in there are relatively steep, and the creek is on a fairly steep slope in that section. There has been some sloughing from the valley walls; while it is quite a sharply incised valley and the water channel occupies practically the whole width right at the bottom of the valley . . . ; there is evidence of a recent sloughing of the banks in some sections of that particular stretch . . . but my conclusion regarding those slopes was that the movements that had taken place were in the nature of just surface sloughs; they were not deep-seated movements. (trans. p. 13).

I interrupt the quotation to note this mention of an initial landslide antedating that of May 11, 1961, by an unspecified lapse of time.

Three or four thousand feet upstream from point X on exhibit R (see also photo exhibit N), looking downwards from the little alpine meadow, the source of this creek, exhibit R depicts:

A fairly steep-sided valley with the creek right in the bottom of the valley with no width for meandering to speak of, and the creek is on quite a

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rapid slope. There is no evidence of recent slide scars in this section at all; there is no evidence of channel erosion in this section . . . . There is one slide area in this picture, and by coincidence the sun was such that it just shows up the slide area in the upper centre of the picture, (ex. N), and that is a comparatively recent slump, but it is a shallow slump . . . . This type of slide is not of the same nature (as) the slide at Point X (on ex. R) in my opinion. It is quite a shallow surface sloughing and the vegetation has been re-established on it, and . . . could not possibly have grown to that extent in the two years . . . This is a more ancient slide but it is a slough that has come down the valley side-wall. (trans. pp. 14-15).

The "two years" above refer to Doctor Hardy's first inspection trip, July 29, 1963.

The engineer's attention was drawn to the exceptional conditions at the intersection of the old and new channels, a question he takes up with renewed insistence:

. . . I think we should say more, sir, about this unnatural condition at Point O on Exhibit R. Of course, that is shown in Exhibit Q which was taken ten years previously. But it is the old channel—the old channel was blocked at Point O by a very substantial pile of—or it is blocked now by a very substantial pile of debris.

The witness continues (cf. pp. 16, bottom line, and 17):

. . . there was nothing immediately around that within a hundred feet of that area that could be the source of that blockage; the only possible source is that it came down the creek and that at some stage there was a similar event to the blockage that we say occurred at Point X and that subsequently caused the trouble at the railroad. It would be a much bigger catastrophe in terms of yardage of material involved and quantity of water, but the hydraulics or the mechanics of that earlier washout, if you like, is interesting in a number of respects in relation to the one that occurred on May the 11th in 1961.

. . .

There is still a considerable slope down to the railroad, but there is a change there, and it deposited that debris up there. Where the slide occurred on May the 11th, 1961, it didn't deposit this debris load until it got down to the culvert almost at the railroad. Well, the blockage or the debris blocked the creek and the water then forced itself into a new channel which is an artificial channel from the natural hydraulics point of view, that is the present creek bottom.

Dr. Hardy has examined the aerial photos with the hope of measuring the extent of the drainage basin and is reported, at page 20, to have testified that:

A. . . my estimate from the aerial photographs is that the area of the drainage basin is two to three square miles.

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Question by Mr. Frank E. Dent, counsel for defendant:

Q. Did you consider that the particular area of the slide which you have described is particularly prone or susceptible to slides?

A. Well, it is mountainous area, and when you are in the mountains, you have to expect slides . . . In my judgment, based on my own

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experience in the mountainous areas, this is not a particularly active slide area. In fact, it is a comparatively stable area from the point of view of surface slides in mountainous areas.

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Dr. Hardy comments that anyone coming "from a trip through the Kicking Horse Pass . . . or from the Fraser Canyon" will find at mileage 116.5 "no hazard here compared to that at all". An understandable observation on the part of this experienced technician, but of indifferent probative weight if one remembers that Kicking Horse Pass and the Fraser Canyon notoriously stand out as major achievements of daring mountain engineering, therefore subjected, presumably, to constant watching. Conformably to this line of comparative reasoning, Zero weather in Eastern Canada may feel mild to an inhabitant of the Arctic Circle. It is fair to say that Professor Hardy, quickly perceiving the conflicting exaggeration, at once rectified his aim, adding: "But it is relative. You are in a mountainous area and the weathering conditions are tending to bring things down to the bottom of the valley; *so you must anticipate that you are going to have slides.*" If the permanent anticipation is such, should not the corresponding watchword be: permanent caution?

The witness explains that: ". . . *between this creek and Revelstoke, there are areas where the hazard from snowslides is the greatest on the whole system on either railroads, and this is also snowslide area, and there is evidence of snowslides within a mile of this creek . . .*"

Next, referring to the picture exhibit K, taken from a helicopter, the deponent points out that ". . . in this particular location the exposure that is shown on Exhibit K indicates quite a substantial thickness, of several feet, it might be ten, fifteen, twenty feet, even, of material that is susceptible to sliding . . ." Now, one can hardly escape the thought that such a lurking threat could and should have been anticipated, investigated and obviated in the Spring of 1961.

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To a question by the Court, the witness replies:

*If the C.P.R. had asked me for advice on what was the hazard at this particular location, I would have, I am afraid, said that they should be on the lookout for similar events to what blocked the channel at "O" on Exhibit R originally, and if they occurred they would re-establish the old channel.*

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This expert's opinion, so far, about the utility of aerial photography is that ". . . in slide areas of small proportions such as the slide we are saying caused this derailment at Mile 116.5, you could not locate that sort of thing from the study of aerial photographs from this area. It would be a mere coincidence, almost, if you could".

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Nevertheless, the witness' subsequent testimony does not tend to minimize nor deprecate the assistance derived from aerial photography, as the undergoing quotations will prove, while affording also a significant instance of soil research investigations entrusted to R. M. Hardy and Associates Limited, by the Canadian National Railways over a 100 miles of line. At page 45, we read:

. . . Coming to railroad work, the firm of which I am a partner, R. M. Hardy and Associates Limited, have a commission right now from the Canadian National Railways to examine the conditions on about 100 miles of line . . . They have slide problems that are more important to the railroad now . . . On this job we first of all travelled the railroad on railroad knickers. We talked to the railroad people who had been maintaining this line for years. We looked at troublesome spots on foot. Then we studied the geology of the area and we also then got aerial photographs of the whole line and studied them in detail. Then, *we went in and drilled certain locations that we picked from the aerial photographs* and what we saw on the ground, and we did some geophysical work, and then we took all this information into the office and worked it up into a procedure for upgrading this line.

Whether or not this meticulous scanning of the terrain bordering on the C.N.R.'s right of way came as an aftermath of the incident at issue, I have no means to tell. Still, the defendant Company, aware of both this mud slide and that of June 24, 1958, which swept four diesel engines and ten freight cars off the tracks, would not have displayed excessive care had it preceded the Canadian National Railways in the use, to some degree, of similar vigilance.

Be that as it may, Dr. Hardy, when asked if the conditions he holds responsible for the slide "could have been identified beforehand", asserts that ". . . they could not have been identified with any standard techniques that are accepted in good engineering practice for location work originally or in connection with maintenance operations" (trans. p. 46). On the next page, (47), the witness continues thus: "Now, in hindsight, I can see how this happened, but I doubt very much if I could have logically come to the conclusion on the basis of what you can see in the past history

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of that creek that the slide just like this one that occurred and caused the derailment would have acted that way”.

Defendant's counsel then puts this question to the soil mechanics specialist (at p. 48):

... Doctor, how does the spot where the slide occurred compare with other areas in British Columbia?

... certainly (it) can't be taken as being a hazardous spot. If you identify this location as being hazardous to the railroad operation, there are literally hundreds of similar locations in the railroads in the mountains of B.C. that you would have to say are equally hazardous.

Should there be, as the witness testifies, hundreds of spots in a given area liable to trigger, in three years' time, two disturbances of such force, it follows that aerial inspection, at regular intervals, would constitute the minimum precaution expected. However, Doctor Hardy is satisfied that the railway did all it could to avoid this washout (cf. trans. p. 52).

On cross-examination by Mr. Henry B. Monk, Q.C., plaintiff's counsel, the witness was of the opinion that “. . . most of the material that blocked the culvert and filled up the ditch and went over the top was picked up at the lower end of the slide. It didn't originate in this hillside that came down first or this little slide that popped down into it . . .” (trans. p. 55).

This deduction, by Doctor Hardy, prompted the question, at p. 69:

... you agree with me, then, that the pile of debris would be some notice to a knowledgeable person that there was material further up the mountain which might come down?

the reply being:

*That is correct, if the location engineer saw that, he should be alerted.*

A query comes to mind: why didn't the location engineer locate this pile of telltale debris not so remote from the tracks or possibly fringing them?

The matter of aerial photographs came up anew. Mr. Hardy now eulogizing their usefulness in connection, particularly, with the San Guido subdivision, where “. . . we made quite extensive use of them” over “the whole hundred and one miles”. (trans. p. 72).

The objective then sought was the obtention, in quick fashion, of data about soil and embankment solidity, old

slides and river hydraulics, also for the purpose of ascertaining potential dangers. Mr. Hardy winds up this topic by observing that:

*... the information from the aerial photographs was very valuable in arriving at a decision as to what we were going to do in stabilization.* (trans. p. 73).

It is a part of the Company's duty to seek out the spots of prospective danger and apply the requisite correctives. Investigation of the area would turn up these facts, visually ascertainable, agrees the witness, who, on page 77, outlines what should be done:

*... They (the C.P.R.) have two choices—at least two choices available to them if they have a slide: They can go up and make an examination and decide that they will do something at the source to eliminate a recurrence of it, or they can do something somewhere else . . .*

Doctor Hardy believes that expectation of more landslides "is one of the factors that might have influenced" the erection of a warning fence at Mile 116.5 (trans. p. 77); he also suggests as his "rough computation" that 2000 cubic yards of earth were necessary to swell the slide that filled the ditches, a culvert four feet high by eight in width, spreading about 120 feet along the track, its mud-floe approximately five feet thick (trans. p. 79).

Sometime before 1957, the witness was requested by the Trans-Canada Highway authorities to survey this area for their purposes, namely "to tell them whether there were any particularly hazardous soil conditions" (trans. p. 82). Prior to the start of his technical task, including inspection by train and with the field parties, Dr. Hardy observed the considerable amount of work, soil boring and soil tests, already done by his clients in an area comprising Mile 116.5. He summarizes his search report to the Trans-Canada people in these words:

*My report to them was that the soil conditions were not particularly hazardous and that the stability conditions were not particularly severe, and I had in mind specifically in comparison to the stability conditions of the slopes in the Kicking Horse Pass between Golden and Field,*

localities qualified by the expert as "*extremely dangerous*" (trans. pp. 82, 83, 84).

I previously elaborated on the relative fallacy of evidence by approximations, a logical breakdown of which, presently, is that the description "not particularly hazardous" applies only as against the opposite term "extremely dangerous",

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leaving a melancholy intermediate conclusion of "hazardous enough". The 1958 and 1961 incidents do not disprove this deduction.

The impression I gathered from this testimony might be summarized in this exchange of questions and answers between counsel and witness:

Q. Would it be fair to say that it has always been recognized that there is some danger in this area?

A. That is correct.

Q. And the railway has known this all along?

A. You are in mountains, and so you have to accept that condition.

Q. Yes, and it is a question of judgment as to what steps are taken to meet the risk?

A. There is a large element of judgment in it, yes.

Q. *And there is also an element of economics in that it may be better to take the risk and pay the piper, if necessary, than spend the money to eliminate the risk?*

A. *That is one way of assessing it, yes.*

(trans. p. 78).

What precedes could well open a wider window upon the real factors involved.

Another eminent scientist, Dr. Hugh Quinton Golder, a professional engineer, interested in soil and foundation problems, as his predecessor on the witness stand, was next called upon to state his views on the matter.

His services were retained by the Crown and the Canadian Wheat Board to investigate the occurrence at Mile 116.5.

We are told that two slides happened; "a collapse of a steep till slope some distance up the creek . . . then the material in the creek moved down . . . under the influence of water", an incident classified as a debris flow (trans. pp. 7-8).

Dr. Golder made three visits at, and in the vicinity, of Mileage 116.5, on February 5, 1962, May 20 and June 17 of the same year. He examined the slide area on foot and flew over it in a helicopter.

Of special interest is a series of 18 pictures, produced in bulk as exhibit 11 but respectively bearing a distinctive number.

On photo 2 (ex. 11), an arrow topped by the numeral 2 indicates the mountain gully in line with Mile 116.5, the course followed by the mudslide.

Passing now to photo 6, we see the top end of gully #2, looking south, with the gathering ground for the waters seeping down to the creek at melting time and rushing towards the culvert at Mile 116.5.

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Photo 7, taken, like the preceding and a few others, on June 17, 1962, from a helicopter, shows, Point "A", the heap of debris where the gully branches off. Point "B" is a scar on the side-wall of the creek where falling soil traced new scrapings.

Turning now to photograph #8, of June 17, 1962, we see that the bottom of the slope has been cut and a fall of material into the creek which would probably block it.

Photo 9, of May 20, is a clear view of the water shed down gully #2. The witness says that the stream "is largely flowing on rock at this point and on the right-hand side we can see bare rock. On the left-hand side there is a certain amount of till and loose material. But at points you can see rock, the cover is very thin." (trans. p. 27).

Photo 10, of May 20, 1962, shows the pile of debris where the gully divides in two. It consists of rocks, soil, some timber and portions of trees. The witness, thinking back a couple of years, would say this pile of debris was ten or twelve feet high and perhaps a little more.

Photo 11 was taken on foot, May 20, 1962, from the top of the same pile of debris, looking down the old stream bed in a northerly direction.

Of the same date, photo 12 peers into gully #2 and it is of interest to note the material "piled up on the left, down the channel of the gully, which indicates or gives some idea of the level to which moving material rose during the actual slide". (p. 30). This height would have attained, in the witness' opinion, a level of six to eight feet above the present stream bed.

Photo 13 affords "a fairly good idea of the amount of material which must have come down the gully at the time of the slide. You can see a lot of larger rocks and a lot of finer material". (trans. p. 31).

Taken from the track, on June 17, 1962, photograph #14 illustrates the water cascading down gully #2 and, very thinly etched in the foreground, the Page warning fence set up after the mudslide of May 11, 1961.



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Photo 15, of May 20, filed separately as ex. 4, is a view of the warning fence and some of the debris left from the slide on both sides of the track. At Points "A" and "B" appear piles of rotting wheat, presumably a relic of the accident, says the witness (trans. p. 33).

The warning fence appears on photo 16, filed as ex. 3.

The culvert, at the critical spot, is visualized on photo 17 of ex. 11, taken May 20, 1962. Dr. Golder notes the culvert "is running about three parts full" possibly because some of the space is occupied by rocks and not water; due also to the fact that this culvert had not been sufficiently cleaned out, a surmise apparently borne out by photo 18 (ex. 6) showing the downstream or opposite outlet of the culvert with a considerably reduced flow of water, explainable by the presence of some obstructions at its entrance (trans. pp. 35-36).

Photo 19 is missing.

Numbers 20 and 21 are of no great interest in the case and 22 is a Dominion Government photograph of 1958 from the Archives of the Royal Canadian Air Force, indicating Twin Butte siding and sites of both gully #2 and of the mudslide.

All this evidence appears in the transcript of Dr. Golder's testimony, pp. 23 to 41 inclusive.

Three "failure zones" or "places where there had been slides" were observed in the steep till slopes, and I am told that the science of soil mechanics has adopted methods of detecting slide areas such as this. In conformity with those norms, Dr. Golder, first of all, during his inspection, looked "at the aerial photographs", since "*in an area where they are available, they are a very cheap method of getting quite a lot of information quickly*". He pursues thus: "I would insist that information obtained from aerial photographs was later checked by ground survey. There are some places where, looking at the photographs, you could say straight away in these areas there is no danger of slides" and ". . . some places where you could say . . . you most certainly will have slides . . . One could say, here is an area where you will have a supply of water, you will have till slopes into which a river is cutting or a creek is cutting and you have quite a steep grade. So that, potentially, you have the requirements or the conditions which will cause a flow at

some time . . ." (trans. pp. 46-47). A stereoscopic study of photograph 22 revealed "slight humps in the ground, each side of gully No. 2 . . ." suggesting the somewhat ominous presence of "an unconsolidated material", soil, sand or gravel. (trans. p. 47).

Proper allowances had for the hindsight wisdom of an *ex post facto* test, this does not impugn the methods advocated.

One of the next questions bring to the fore the matter of costs "in relation to the C.P.R.'s operation". Since economic considerations appear threaded into the skein of the problem, and cannot be readily dismissed, I deem it advisable to quote abundantly from Doctor Golder's reply; he is dealing with aerial photography:

Assuming the photographs exist and that the line is 500 miles long . . . taking photos at a scale of one inch to 1,320 feet, that is four inches to a mile, you would have one eight-inch wide photo (covering) two miles; so you would have 250 sets of photographs to examine. I have assumed that a quick examination of these might show you that in half the area there was no great danger. You have to make some sort of assumptions. I have allowed fifteen minutes for each of those photographs. In other areas where there might be some danger . . . I allow one hour for study of each pair of photographs, and that comes up with something like thirty days, and the total cost would be, I suppose, three to five thousand dollars, that sort of order. (trans. pp. 48-49).

A triple classification of the Rocky Mountain region is made by Doctor Golder: a zone of immediate danger, probably known to the railway company; one of no danger, and, lastly, a zone of potential danger such as Mile 116.5, which ". . . should be examined on the ground to see whether or not in the engineer's opinion it was necessary to do anything". (trans. p. 49).

A major reason inviting caution would be, in the witness' own words, that:

If you have a steep slope of till and you have a stream, a fairly fast stream running past the bottom, it is, I think, inevitable that sooner or later you will have a fall or a shallow rotational block slide of the till into the valley, and that is what did in fact happen. (trans. p. 53).

Just walking along the track in the vicinity of Mileage 116.5 would not reveal traces of two former land falls ". . . but, if the person had gone a little off the track or had looked at the aerial photographs before he made the reconnaissance, he would, I think, have found evidence of two slides quite readily", vouchsafes Doctor Golder (trans. p. 55), who also believes that ". . . the mechanism of the

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*slide in gully No. 2 is such that one could expect a recurrence of the slide."*

Conflicting with Professor Hardy's statement that the flow and slide were a potential danger impossible to foresee by any known technique, is the deponent's equally positive view "that the slide, the possibility of a slide, could have been foreseen". He adds: "*I would go so far as to predict that there will be other slides at this point sometime in the future.*"

Anteriorly (pp. 64, 65), the plaintiff's expert had assumed that till areas in British Columbia could be expected along 500 miles of railway line, and made "a rough guess that half the area might deserve study". A detailed schedule of remedial measures suggested by soil mechanics or foundation engineering is outlined and may be read on pages 86, 87 and 88 of the transcription.

Admittedly, I felt embarrassed at the idea of tying down the company to what might seem prohibitive costs over, possibly, a 200-mile stretch. I had in mind the evidence of Mr. Roy Arnold Swanson, plaintiff's assistant engineer for the Pacific Region, that in the last ten years a "rough estimate . . . of expense incurred by the railway" for remedial action " . . . between rock sheds, tunnel lining, slides stabilization" would be "around two and three quarter million dollars". (trans. p. 13). Dr. Golder, however, allayed my perplexity by this quite simple solution (trans. pp. 88-89):

. . . We then arrive at the point that we are not going to try to stop the slide necessarily, but we want to prevent the slide, if it takes place, from wrecking a train. So you then come to your warning devices such as the fence that has been erected at this point, and I am sure that there are other warning devices which the railway company probably know about.

Here, a responsive chord was struck of which the erection of a Page Wire Fence, automatically releasing a warning signal when any obstruction hits it, was a practical echo. It will be remembered that, since the mud slide, Mileage 116.5 is fenced off in this manner, surely not an uneconomic care, nor a superfluous precaution in view of the witness' reiterated belief thus expressed on page 108:

*I think that another slide could happen at any time in that valley, in valley No. 2, this is.*

Again, I would single out as significant of Dr. Golder's long testimony, the following questions and replies:

By Mr. Dent:

Q. Am I correct in this that you disagree with the railway company's procedures at the moment for protecting its line?

A. I don't disagree with what they do . . . *What I was going to say was it seemed to me that it might be reasonable to do something more than they do*, but I explained earlier that I do not know anything about the economics of running a railway. But as an engineer I know that that is a very important part of our problem . . . I can only say that certain procedures which I have suggested seem to me to be a reasonable approach to the problem.

Q. Regardless of the cost involved?

A. The cost of what I have suggested is quite small in terms of finance of the railway company. (trans. pp. 111, 112).

This review of the material incidents and scientific appreciation of the case, which, I hope, may be sufficiently comprehensive, now calls for a conclusion.

Defendant pleads " . . . that the wreck and the consequent damage to the said wheat was the result of an act of God".

What is considered an Act of God?

Halsbury's Laws of England Third Edition, vol. 8, p. 183, no. 317, under the caption of "What constitutes an act of God", defines it as follows:

An act of God, in the legal sense of the term, may be defined as an extraordinary occurrence or circumstance which could not have been foreseen and which could not have been guarded against; or, more accurately, as an accident due to natural causes, directly and exclusively without human intervention, and which could not have been avoided by any amount of foresight and pains and care reasonably to be expected of the person sought to be made liable for it, or who seeks to excuse himself on the ground of it. The occurrence need not be unique, nor need it be one that happens for the first time; it is enough that it is extraordinary, and such as could not reasonably be anticipated. The mere fact that a phenomenon has happened once, when it does not carry with it or import any probability of a recurrence (when, in other words, it does not imply any law from which its recurrence can be inferred) does not prevent that phenomenon from being an act of God. It must, however, be something overwhelming and not merely an ordinary accidental circumstance, and it must not arise from the act of man.

Black's Law Dictionary, Fourth Edition, 1951, Vo. Act of God, emphasizes that the event attributed to the intervention of purely natural causes " . . . could not have been prevented or escaped from by any amount of foresight or prudence, or by any reasonable degree of care or diligence, or by the aid of any appliances which the situation of the party might reasonably require him to use". (italics not in text).

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An exculpatory plea of this nature is, necessarily, an extreme one, which must evince most if not all of the characteristic traits predicated of it. Otherwise, the expression, act of God, becomes a self-serving synonym for the negligent inaction of man.

The evidence reveals manifest traces of an initial soil movement of huge proportions, with, additionally, other slides occurring on June 24, 1958 at Mile 86.7, and the present one. Doctor Hardy, defendant's expert witness, classifies gully no. 2 as potentially dangerous; Doctor Golder, for the plaintiff, goes a step further and expects other washouts to happen any time.

A hundred feet or so from the tracks a watchful eye would have detected the unmistakable proof of past trouble, a pile of debris, also an ill-omen of future danger.

Patrolling the line, examining culverts, testing bridges, building rock sheds are essential but insufficient cares for the reasons stated previously.

Then, what else should the company have done? I believe it was duty bound, at regular intervals, to undertake a check by aerial photography of the "dangerous" and "potentially dangerous" mountain zones. Doctor Golder insisted this mode of investigation provided "a very cheap method of getting quite a lot of information quickly". I incline to think this omission, throughout, derogates from the condition just cited, not to disregard "the aid of any appliances which the situation of the party might reasonably require him to use".

In Mr. R. A. Swanson's own words: "No over-all program of precautions to prevent mud slides was ever drawn up".

I am also of the opinion that, occasionally, the line men, foremen, assistant roadmasters or roadmasters, should, opposite bridges and culverts of some size, as that at Mileage 116.5 (4' x 8'), leave the track and walk up the stream beds for a certain distance. Even a cursory look at the surrounding heaps of debris in the instant case would have put a knowledgeable person on inquiry.

The economic factor appears to wield a disproportionate influence in this attitude of hopeful and relative passivity. Professor Hardy, it will be remembered, readily admitted that one way of assessing the situation was it might be better to take the risk and pay the piper, if necessary, than

spend the money to eliminate the risk. Defendant's Vice-President and Regional General Manager, Mr. Leslie R. Smith, did not strike a different note when he explained that: "The risk of running into any kind of obstruction on the tracks has been considerably reduced owing to the precautionary measures employed. *Under such conditions the Company is willing to face that risk.*"

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Briefly stated: What is done by the company is well, but falls short of the entire fulfilment of its obligations as a common carrier under the circumstances.

I cannot reconcile the evidence with, for instance, Halsbury's text (*supra*) that "An Act of God, in the legal sense of the term, may be defined as an extraordinary occurrence or circumstance which *could not have been foreseen* (italics are mine) and which *could not have been guarded against*", nor did it exclude all probability of a recurrence. Neither do I find compliance with the standard set by Mr. Justice Duff (as he then was) *in re: Pleet vs Canadian Northern Quebec Railway Company*<sup>1</sup>. I quote:

I have come to the conclusion that the proof is not, as regards the nature of the precautions taken, *of that close knit character which a tribunal charged with the responsibility of deciding that issue might fairly require.*

Based upon an act of God, the defendant's proof primarily reveals an act of economy, a thrifty objective which, presumably, pervaded overmuch the company's line of conduct.

FOR THE FOREGOING REASONS, I would maintain the plaintiff's action for the sum of \$46,199.95, together with taxable costs.

*Judgment accordingly.*