"We Could Not See One Body"

(Revised and expanded 20 September 2014)

By Samuel Halpern

When *Californian* came alongside *Carpathia* about 8:30 a.m. Monday morning, 15 April 1912, the two ships began signaling each other by semaphore flags. According to *Californian*'s Third Officer Groves who was reading the signals:[1]

> The first signal shown was fixed on the jumper stay. That is a signal that she wanted to semaphore…I think the first question she asked was had we any survivors on board, survivors or people, I do not know which she said…We said, No…we asked him if we could be of any assistance, and he said, No…He told us the *Titanic* had struck an iceberg at 12 o'clock and had sunk at 3, and they had 800 or 700 - I am not sure which - people on board, including Mr. Bruce Ismay. When we asked him if we could be of any assistance they said, no. And then Captain Lord suggested that we should search down to leeward.

A very similar story is told by *Carpathia*'s Second Officer James Bisset.[2] When the *Californian* came within ½ mile and stopped an officer on *Californian* using hand flags signaled, "What's the matter?" Bisset said that it was he that replied with hand flags:

> *Titanic* hit berg and sank here with loss of fifteen hundred lives. Have picked up all her boats with seven hundred survivors. Please stay in vicinity to search for bodies.

This exchange was the first confirmation received by *Californian* that *Titanic* had actually sank. Among the wreckage were several empty boats, some floating planks, a few deck chairs, some cushions, some cork, and a few life belts floating around. *Carpathia*'s Captain Rostron mentioned seeing one body amongst the wreckage. But *Carpathia* did not get up to the wreckage until it picked up the last lifeboat.

> 25499. But you had been close to the spot for some time, had you not? – [Rostron] Yes, but we had not seen this wreckage. We had been dodging about picking up the other boats. I had not any idea where the wreckage was. As soon as we had finished taking the passengers from the boats I cleared off to another boat to pick them up, and was dodging about all over the place to pick them up. It was only when we got to the last boat that we got close up to the wreckage. It was close up to the wreckage. It would be about a quarter to eight when we got there.

Lawrence Beesley, a second class *Titanic* passenger who survived in Lifeboat No. 13, wrote the following in his book, *The Loss of the SS Titanic*:[3]

> So in the absence of any plan of action, we rowed slowly forward--or what we thought was forward, for it was in the direction the *Titanic*'s bows were pointing before she sank. I see now that we must have been pointing northwest, for we presently saw the Northern Lights on the starboard, and again, when the *Carpathia* came up from the south, we saw her from behind us on the southeast, and turned our boat around to get to her. I imagine the boats

[1] British Inquiry, 8353-8366.
[2] James Bisset, *Tramps & Ladies,* Ch. 24.
[3] Lawrence Beesley, *The Loss of the S.S. Titanic*, 1912, Ch. V.

> must have spread themselves over the ocean fanwise as they escaped from the *Titanic*; those on the starboard and port sides forward being almost dead ahead of her and the stern boats being broadside from her; this explains why the port boats were so much longer in reaching the *Carpathia*--as late as 8.30 a.m.--while some of the starboard boats came up as early as 4.10 a.m. Some of the port boats had to row across the place where the *Titanic* sank to get to the *Carpathia*, through the debris of chairs and wreckage of all kinds.

According to Captain Rostron, the lifeboats were spread over an area of 4 to 5 miles.[4]

At the American Inquiry Major Peuchen, a first class *Titanic* passenger who survived in Lifeboat No. 6, was asked about the wreckage that was seen in the morning.[5] His comments were:

> That is something that astonished me very much. I was surprised, when we steamed through this wreckage very slowly after we left the scene of the disaster - we left the ground as soon as this other boat, the *Californian*, I understand, came along - that we did not see any bodies in the water. I understood the *Californian* was going to cruise around, and when she came we started off, and we went right by the wreckage. It was something like two islands, and was strewn along, and I was interested to see if I could see any bodies, and I was surprised to think that with all these deaths that had taken place we could not see one body; I was very much surprised. I understand a life preserver is supposed to keep up a person, whether dead or alive.

Carpathia's Second Officer James Bisset had this to say about the lack of bodies in his book *Tramps and Ladies*:[6]

> The dead bodies were there, totally or partially submerged, but, in the choppy seas, it was now almost impossible to sight them, as white lifejackets would have an appearance similar to that of the thousands of small pieces of floating ice or white-painted wreckage. A dead body floats almost submerged.

Bisset also mentioned that some *Carpathia* passengers and *Titanic* survivors, who were crowding the deck rails of *Carpathia* as she steamed off, later stated that they saw many bodies floating in the water. He then goes on to say that they may have done so, or what they saw may have been just floe-ice or some small wreckage.[7]

Carpathia took aboard 13 of *Titanic*'s 20 lifeboats, leaving behind the rest among the wreckage. This included overturned Collapsible Lifeboat B that Second Officer Lightoller, Colonel Gracie, Jack Thayer, junior wireless operator Harold Bride, and several others had managed to climb on to as the ship was going down.[8] This overturned collapsible boat could not have gone too far from the rest of the floating wreckage. After all, it got freed from the ship as the ship started to go under, and those that managed to climb on top of its upturned bottom were certainly not rowing. Luckily those men were taken aboard lifeboats No. 4 and No. 12 later in the morning and then to the rescue ship *Carpathia*. The overturned collapsible boat was left adrift in the wreckage and was later seen by Captain Rostron from *Carpathia* as noted in a report on 19 April to the General Manager of the Cunard Steamship Company.

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[4] British Inquiry, 25500.
[5] American Inquiry, page 347-348.
[6] James Bisset, *Tramps & Ladies,* Ch. 23.
[7] James Bisset *Tramps & Ladies*, Ch. 24.
[8] British Inquiry, 25477.

Overturned Collapsible Boat B photographed from *Mackay-Bennett*

The answer to the mystery of why bodies were not easily seen may have been touched upon by Major Peuchen. He had pointed out to Senator Fletcher that "a breeze started up at daybreak…from the north at that time." This would have started to scatter some of the flotsam and bodies over some area. We know from Rostron that *Carpathia* came near the wreckage as it was picking up the last lifeboat. However, it appears that *Carpathia* never went to windward of the wreckage that Rostron identified. In fact, it appears that he purposely avoided the area. It is quite obvious that there were hundreds of bodies floating around, after all the recovery vessel *Mackay-Bennett* found them amongst some wreckage 5 days later, including overturned Collapsible Lifeboat B.[9] Despite Rostron's claim that he saw but one floating body, it seems he decided that it was not a good idea to take any bodies on board.[10] As he explained at the American Inquiry: [11]

> For one reason, the *Titanic*'s passengers then were knocking about the deck and I did not want to cause any unnecessary excitement or any more hysteria among them, so I steamed past, trying to get them not to see it.

According to Captain Rostron, *Carpathia* left the area at about 8:50 a.m. *Carpathia* time,[12] leaving *Californian* to continue to look for any possible survivors as Rostron was not quite sure whether he could account for all the boats at that time. As *Carpathia* started to steam away, two bells were struck at 09:00 which was heard across the water on the nearby *Californian*.[13] *Californian* stayed behind to continue the search. According to Captain Lord:

> I talked to the *Carpathia* until 9 o'clock. Then he left. Then we went full speed in circles over a radius - that is, I took a big circle and then came around and around and got back to the boats again, where I had left them.

According to *Californian*'s Third Officer Groves, they went to search the area to leeward. In 1957 Groves wrote a third-person narrative to Walter Lord, author of *A Night To Remember*, giving some of his recollections about those events.[14] In it he mentions:

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[9] *Halifax Evening Mail*, Tuesday, April 30, 1912.
[10] J C Neilson, "The Morning After...Where Were the Bodies?" *Encyclopedia Titanica* , Friday 20 September 2002.
[11] American Inquiry, page 22-23.
[12] American Inquiry, page 33.
[13] British Inquiry, 8367.
[14] Charles Victor Groves, "The Middle Watch - April 15th 1912," Published in *The Atlantic Daily Journal* of the British Titanic Society, March, 1998.

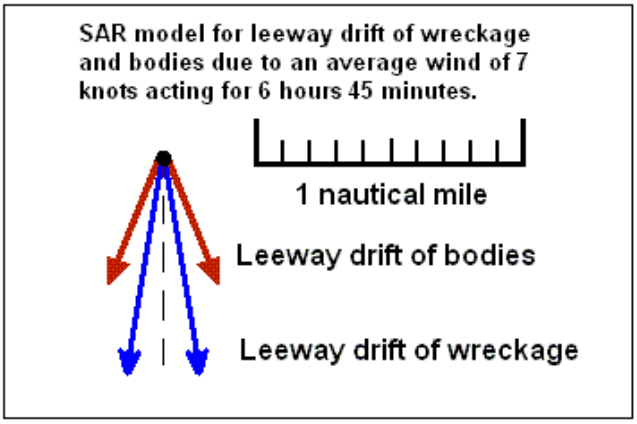
> The *Californian* now made one complete turn to starboard followed by one to port and then resumed her passage to Boston passing the Canadian Pacific steamship *Mount Temple*, and another steamship of unknown nationality.

As previously mentioned, *Carpathia* left the area of the wreckage and abandoned lifeboats about 9 a.m. *Californian* then started its own search to leeward of the visible wreckage. It is possible that most of the bodies may have been to windward of the area seen from *Carpathia* and *Californian*. It just may be a case of *Californian* looking in the wrong direction. As James Bisset put it, a floating body would have less surface area on which the wind could act, and therefore would not have been blown to leeward as much as some of the other wreckage that was more buoyant. The scattering of bodies and wreckage caused by the wind in the morning would cover a relatively small area. As Major Peuchen had said, "probably a mile or half a mile; probably not more than that, considering that the wind only sprang up at daybreak."

As it turns out, Major Peuchen was not that far off. Modern day Search and Rescue (SAR) models use what is called a leeway drift multiplier and a divergence angle to account for the scattering of various pieces of floating wreckage and debris. For boating debris such as deck chairs, lifebelts and other small stuff that were seen at the sight of the wreckage, the SAR models use a leeway drift multiplier of 0.02 with a divergence angle of 10 degrees. For a capsized or overturned marine life raft, they use a leeway drift multiplier of 0.017 and a divergence angle of 8 degrees, values that are close to those used for boating debris. However, for a body floating with a lifebelt in cold water, a leeway drift multiplier of 0.012 and a divergence angle of 18° is used. These component values are used to define the size of a search area in air/sea rescue operations after taking into account the total expected drift due to sea and wind currents.[15]

In the area of the wreck site, the wind first came up after dawn broke, about 2 ½ hours after *Titanic* sank. For most of the lifeboat pickup time, it appears that the wind, which came out of the north, ranged between light (4 – 6 knots) to gentle breeze (7 – 10 knots) conditions. This means that the wind averaged about 7 knots over a period of about 6 hours 45 minutes, from the time it first came up to the time when *Californian* left the scene of the wreckage.[16] Under these conditions, the drift of wreckage, including the overturned collapsible boat, works out to 2.63 nautical miles due to wind current plus leeway drift, while the drift of bodies works out to 2.17 nautical miles due to wind current plus leeway drift. (The drift component due to ocean current, which acted over a period of 9 hours and 15 minutes, works out to 7.37 nautical miles.)

The diagram below shows the leeway drift components only that would have contributed to the scattering of wreckage and bodies.



[15] Captain Lam Kit, "Determination of a Search Area," http://www.seatransport.org/seaview_doc/SV_88/24%20Determination%20of%20a%20Search%20Area.pdf.
[16] Samuel Halpern, "The Drift of Wreckage," *GLTS* website, http://www.glts.org/articles/halpern/the_drift_of_wreckage.html.

As can be seen, most of the scattering of bodies would be expected to be windward of the observed floating debris. It would have been in the area that was avoided by *Carpathia* and *Californian*.

When Captain Lord was asked, "Did you cruise round the vicinity of the wreck?" his response was, "I cruised round there until 11." And according to his testimony, the time they left the wreckage and abandoned lifeboats was 11:20 a.m. *Californian* time.[17] Reading from the logbook: "11.20 proceeded on course N59W by compass." When asked by Sir Robert Finlay if that would be the true course (as opposed to magnetic), Lord replied:

> I think I was intending to make N89W [true]. I think that was my intention. The variation is 23 ½ [degrees], and I think the deviation was 5 [degrees].

Captain Lord was also asked about the speed they were going after leaving the wreckage. His reply was: "I went slow. I came through the ice full speed to the ship [*Carpathia*], but I went back slow."

Now according to testimony given by Third Officer Groves, they resumed their course at "Ten-forty exactly." After that Groves said they saw a lot of ice, passing through a particularly long field and having to "absolutely force our way through it." When asked if this was to the south of the wreckage, he replied, "I think it was about the same latitude, roughly, within a mile or so." The course that Groves remembered was N 60° W by compass, which is very close to what Captain Lord had said. When asked if they traveled about 5 miles from there to the time they took a sight of the sun at noon, he said, "No, more than that; about 11. That is in distance."

Groves also took part in taking those sights at noon. When asked if the latitude 41° 33' N ascertained at noon was the same as that of the wreckage, he said he could not say. However, the compass course he gave shows that they were headed due west true when corrected for magnetic variation and deviation, a course which would have essentially kept them on the same line of latitude as the wreckage.[18]

If we take the information from Captain Lord, it seems that they spent about 2 hours and 15 minutes searching for bodies since the departure of *Carpathia*. If we take the information from Third Officer Groves, it would be more like 1 hour 40 minutes. Are these two accounts really inconsistent?

Let's look further. Lord estimated the position of the wreckage at 41° 33' N, 50° 01' W. This was based on his April 15th noontime position of 41° 33' N, 50° 09' W. From the testimony of Chief Officer Stewart:

> 8817. At noon on the 15th did you take observations to fix your position? – Yes.
> 8818. Who was taking part in these observations? - All the officers took them.
> 8819. Did you get good sights? - Very good sights.
> 8820. Did the sights taken by the various officers agree? - They all agreed.
> 8821. And was the position as ascertained by those sights latitude 41·33? Can you tell me? - Yes, 41·33 N, 50·9 W.
> 8822. That is your noon position? - Yes.
> 8823. Are you able from working back from that noon position to fix accurately the position of the wreckage which you came up to at 8·30? - Yes.
> 8824. How many miles had you traveled between the time you proceeded on your course and when you took this position? - About four or five miles.
> 8825. According to your log, you proceeded on your course at 11·20? - Yes.
> 8826. And you stopped close to the "Carpathia" at 8·30? - Yes.

[17] British Inquiry, 7022, 7267-7270.
[18] British Inquiry, 8368-8373, 8428-8435.

8827. And remained until 11.20? - Yes.
8828. And between 11·20 and noon you say you traveled some four or five miles? - Yes.
8829. Were you encountering ice at the time? - Yes.
8830. Is the position stated in your log as the position in which you were searching for the boats of the "Titanic" accurate or not - latitude 41·33 north and longitude 50·1 west? - Yes.
8831. Was that the latitude and longitude in which you found the wreckage? - Yes.

As it turned out, GMT of local apparent noon for *Californian*'s April 15th noontime position at 50° 09' W was 11 minutes later than GMT of local apparent noon for April 14th at 47° 25' W. This means that the time of local apparent noon on April 15th if seen on an unadjusted clock still set for April 14th time would have been at 12:11.[19] In other words, the time from when they left the wreckage to taking that noon sun sight was about 51 minutes. The distance from the reported wreckage position to their noon position works out to 6 nautical miles. This distance over 51 minutes gives a speed of 7 knots over ground. If we take Grove's data, we have a time difference of 1 hour 31 minutes between when they set their course and when they took that noon sight of the sun. Groves also thought they went about 11 miles. If they made 11 miles in 1 hour 31 minutes then that too gives us about 7 knots over ground. Both sets of data give us the same result for the speed that *Californian* was making after she was heading west.

But we also know from Captain Moore of *Mount Temple* that the ice field was about 5 to 6 miles in width down in the vicinity of the wreckage. This tends to support the distance traveled that Chief Officer Stewart estimated and agrees very well with the 6 miles between the reported position of the wreckage and their noon sun sight. As we have seen, Groves agrees that when they left the area they were within a mile of the wreckage, and he took part in the solar observations at noon. So is there an explanation that can reconcile what Groves said and what was recorded in the log book? Groves seemed to be quite precise about the time the course was altered.

I believe the answer is very simple. The difference in time for the course change between what was written in the logbook and what Grove said is 40 minutes. At 7 knots the distance traveled is only 4.6 miles. The most likely scenario is that the *Californian* had completed its last search circle to leeward at 10:40 a.m. Two complete turns at full speed (about 11 knots) in 1 hour 40 minutes would cover a diameter of almost 3 nautical miles each. At the completion of their last circle they ended up about 4 to 5 miles east of the wreckage which was easily spotted since it included those lifeboats that were set adrift. The course was then set to N 60° W by compass which took them back to the area of the wreckage which they passed at 11:20 a.m., and then changed their course to N 59° W by compass to make N 89° W true [271° true] as they departed the area. As they were coming out of the ice field it was close to local apparent noon. It was then that they took their noon sight of the sun at 15:21 GMT, and shortly thereafter, having cleared the pack ice, Captain Lord went to full speed ahead.

As *Californian* was coming out of the ice field the steamer *Frankfurt* was seen coming down from the northwest.[20] Captain Lord reported:

> I met him 5 or 10 minutes past 12, after I was leaving the *Titanic*, the scene of the disaster. He was running along parallel with the ice, apparently trying to find an opening, and he saw me coming through and he headed for the place I was coming out, and as I came out he went in. He went through the same place toward the scene of the disaster… He was running about south-southeast, when I saw him, coming away from the northwest.

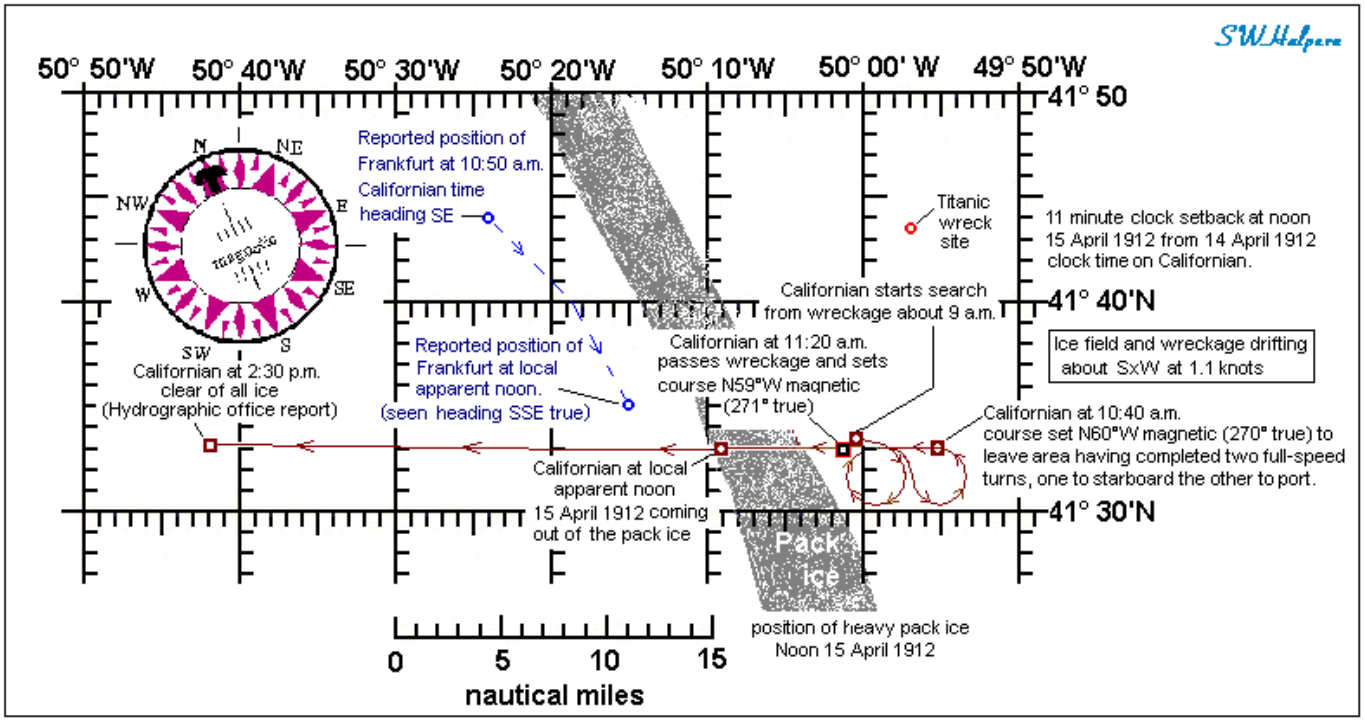
At 10:50 a.m. *Californian* time, *Frankfurt*'s Captain Hattorff had reached the initial, uncorrected CQD position for *Titanic* at 41° 44' N, 50° 24' W.[21] There was no sign of *Titanic* or wreckage, only an

[19] On *Californian* they would have set their clock back by 11 minutes so when the sun crossed their local meridian it would read 12:00.
[20] American Inquiry, page 730.

immense ice field that lay to the east of them that stretched away to the southward. Captain Hattorff then headed *Frankfurt* southeastward reaching 41° 35' N, 50° 15' W at noon, when they saw *Californian* coming out of the ice field off their port bow ahead of them.[22] As *Californian* came out of the pack ice she was slowly steaming across the bow of *Frankfurt*. Hattorff then decided to turn to port and cut through the ice field using the same channel that *Californian* had just taken. This observation by *Frankfurt* tends to confirm the noontime position of *Californian* as reported by Captain Lord and Chief Officer Stewart. At local apparent noon, *Californian* was seen coming out of the pack ice by *Frankfurt*, and *Frankfurt* was seen heading down toward that same spot vacated by *Californian*. This mutual sighting also tends to confirm the latitude of the wreckage since *Californian* had departed the area of the wreckage heading almost due west true as reported by Captain Lord and confirmed by Second Officer Groves.

After clearing the heavy pack ice and leaving *Frankfurt* behind, Captain Lord rang down for full speed ahead as *Californian* continued on her course N 89° W true. According to a marine data report filed with the Hydrographic Office in Boston on 22 April, *Californian* had reached 41° 33' N, 50° 42' W at 2:30 p.m. *Californian* time on the 15th of April when the last of two icebergs were seen and she finally got clear of all patches of field ice.[23] Between noon and 2:30 p.m., *Californian* would have averaged about 10 knots.

The figure below shows the path of *Californian* beginning at the location of the wreckage right after *Carpathia* departed close to 9 a.m. It also shows the two turning circles that she then took, her departure course from the area, and the approach of *Frankfurt* seen at local apparent noon. The total drift of wreckage can also be seen with reference to the location of the wreck site.



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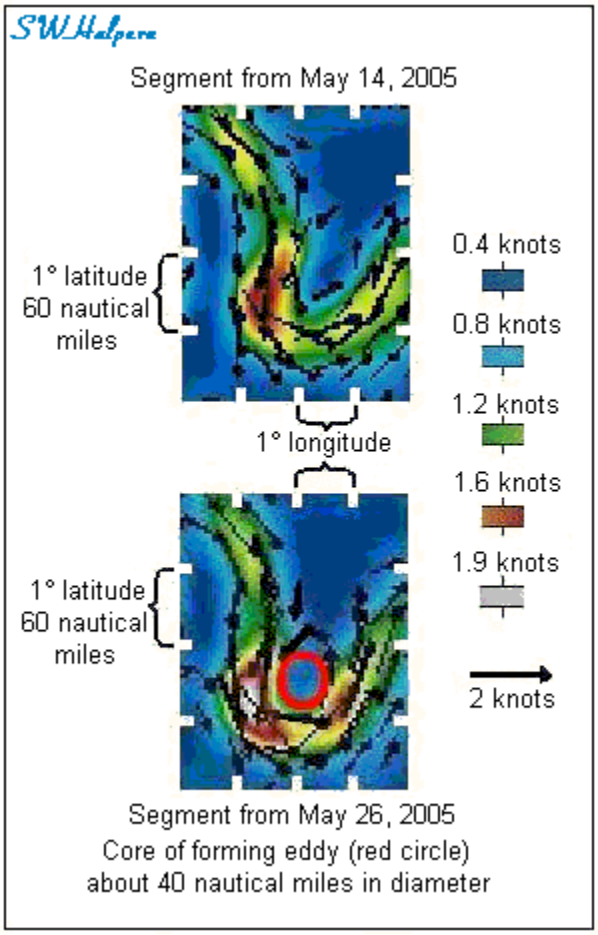
[21] This was the first CQD that was sent out at 10:25 p.m. NY time and then corrected to the famous coordinates of 41° 46' N, 50° 14' W which was first sent out at 10:35 p.m. NY time.

[22] George Behe, "The *Frankfurt* Incident," Part 1, THS's *Titanic Commutator*, 1990 Vol. 14, No. 3. The time of this sighting in this reference was giving at 12:10 p.m.. But that time was for a clock set 1 hour 50 minutes ahead of NY time, or 3 hours 10 minutes behind GMT. If we add 3 hours10 minutes to 12:10, we get 15:20 GMT, or one minute before local apparent noon for that particular longitude.

[23] Copy. File No. 62908-2995. British S. S. *Californian*. Master, Lord. Received in branch hydrographic office, Boston Mass., April 22. Received in Hydrographic Office April 23.

There is the possibility that a cold water eddy had formed in the region where the Labrador and the meandering Gulf Stream currents converged that April 1912. Such eddies are clearly seen in modern day satellite data that show the strengths and directions of surface currents in the North Atlantic, including the region that is of most interest to us. When a cold water eddy develops it has a circulation that is in the counter-clockwise direction.[24]



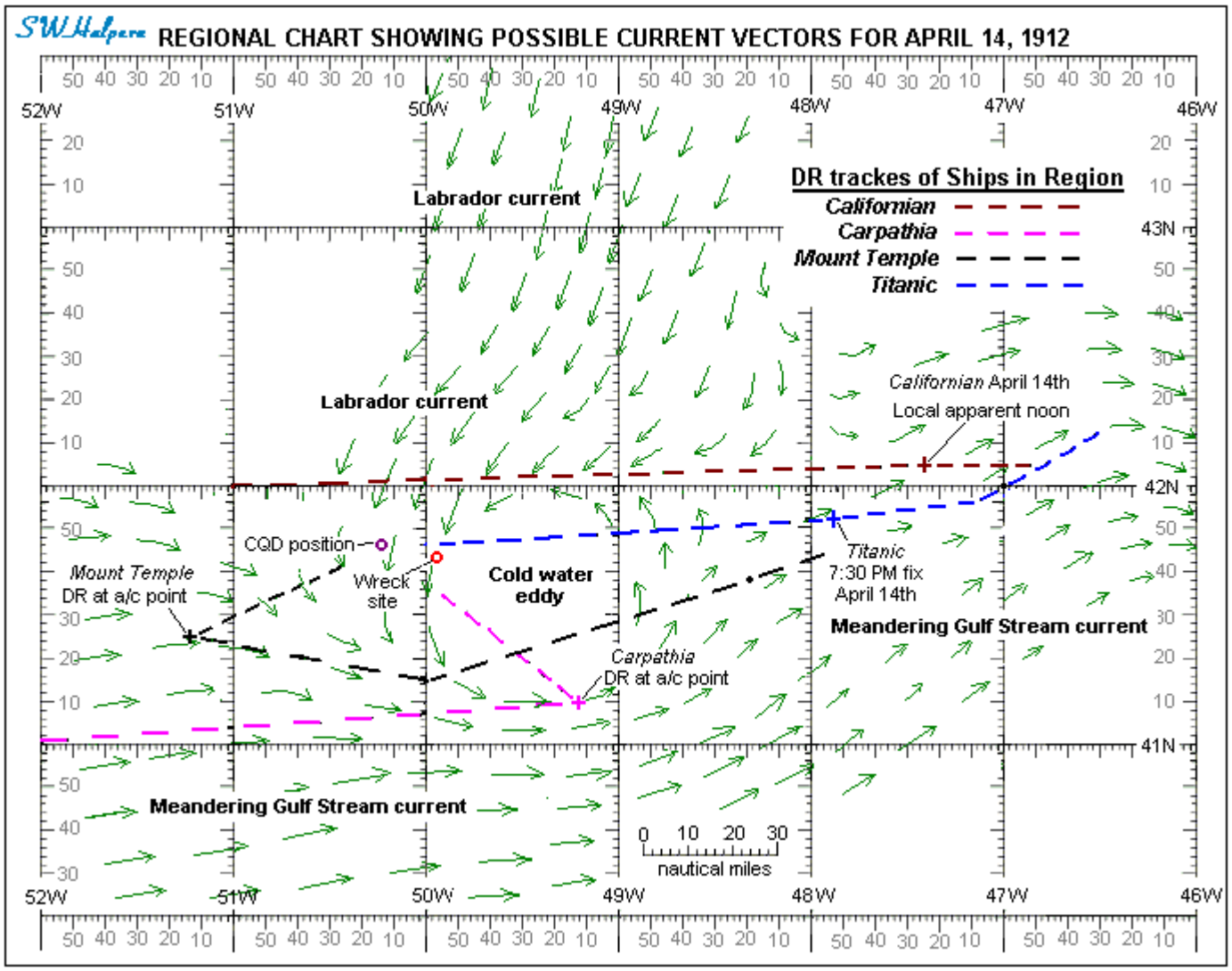
Formation of a cold water eddy seen from satellite data.

This possibility may also explain the movements and locations of *Carpathia*, *Californian*, *Mount Temple*, and *Titanic* during the night of 14 April and morning hours of 15 April as shown in the diagram below, and may also explain the location of many of the bodies seen by the cable ship *Mackay-Bennett* on the 20th of April and other vessels in the days that followed. Included is a set of possible current vectors that were modeled somewhat after modern satellite data. Near the center of the chart, centered about 41° 40' N, 49° 25' W, is placed a cold water eddy with the usual counter-clockwise circulation with a core that is about 40 nautical miles in diameter. Feeding into this is a strong Labrador current out of the north which is converging with a meandering Gulf Stream current flowing from the west, looping around southward, and finally veering off to the north-northeast on the eastern side of the eddy. Included on the chart are the dead reckoning (DR) tracks of four vessels:

- The DR track of *Californian* with its reported noon location at 42° 05' N, 47° 25' W, and heading 269° true from there toward 42° N, 51° W as reported by Captain Lord in his 1959 affidavit.

[24] Refer to archive of images on The Delft Institute for Earth-Oriented Space Research (DEOS) website: http://rads.tudelft.nl/gulfstream/. A cold water eddy has a circulation that goes counter-clockwise and can have very high relative rotational velocities. These eddies can have a central core that is as small as 40 to 60 nautical miles in diameter.

- The DR track for *Titanic* based off of a derived 7:30 p.m. ATS celestial fix position (corrected for a 14' longitude error) at 41° 52.5' N, 47° 54' W, and heading 266° true from that point.
- The DR track of *Carpathia* with her DR location for 12:35 a.m. ATS at 41° 10' N, 49° 13' W, where she altered her course to 308° true (N 52° W) for the Boxhall CQD SOS position at 41° 46' N, 50° 14' W. Prior to that, she was on a Great Circle course toward a point due west of Gibraltar.
- The DR track of *Mount Temple* with her DR location for 12:26 a.m. ATS at 41° 25' N, 51° 14' W, the time when she altered her course to a heading of 065° true (N 65° E) for the CQD position. Prior to that she was on rhumb line to Cape Sable Island from 41° 15' N, 50° 00' W having come down there from the corner to avoid reported ice.

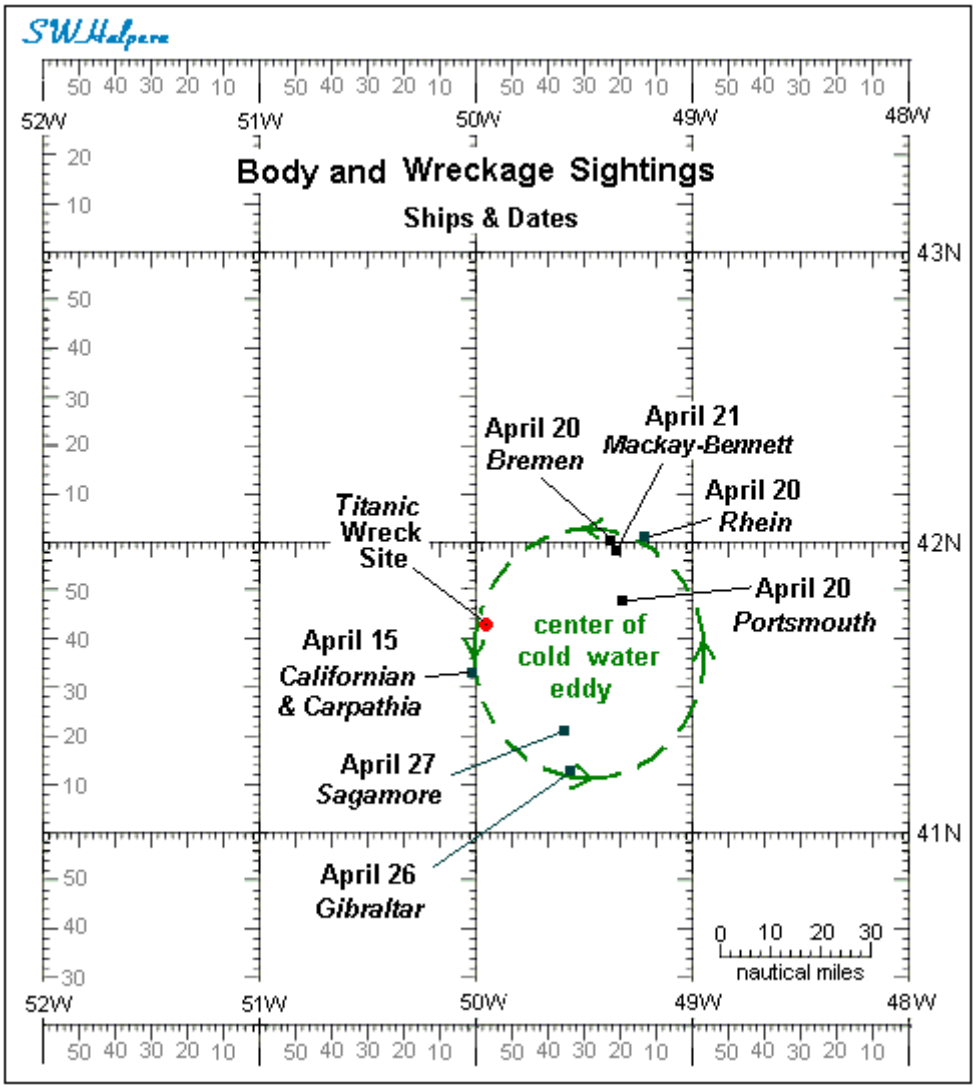


As explained in Part 1 of my four-part article "Light on the Horizon,"[25] such a circulation can account for *Carpathia* and *Mount Temple* being set somewhat eastward from their DR course lines as they raced toward the Boxhall CQD position. It also would explain why *Californian*'s Captain Lord thought his vessel was running ahead of her dead reckoning while going westward as explained in his 1959 affidavit. As far as *Titanic*, the circulation would have tended to a have a canceling effect on her DR courseline, first setting her somewhat northward as she passed first through the eastern side of the

[25] Published in the Titanic Historical Society's journal, *The Titanic Commutator*, Vol. 31, No. 177.

circulation, and then somewhat southward when she entered the western edge of the circulating body of water.

How would this type of circulation affect the floating debris and bodies from *Titanic* in the days that followed the disaster? Radio messages received from the German steamer *Rhein* and the German liner *Bremen* on the 20th of April indicated that there were many bodies and wreckage between 42° 01' N, 49° 13' W and 42° 00' N, 49° 20' W.[26] Recovery was started by the cable ship *Mackay-Bennett* early the next day on 21 April, about six days after *Titanic* foundered. If the bodies had moved with the general circulation in a counter-clockwise direction around an eddy centered about 20 miles east of the wreck site, they would have traveled about 95 miles (about ¾ the circumference around the core) in those six days; the average movement being about 15 to 16 nautical miles per day, or an average rotational drift of about 2/3 knots.[27]



[26] Dave Gittens, *Titanic – Monument and Warning*, Chapter: "Solo And Finale," 2005.

[27] It should be pointed out that icebergs as well as wreckage would have been subjected to flow in this cold water eddy. At the time that bodies and wreckage were seen a number of nearby icebergs were also seen and photographed, including one that matched the description by *Titanic's* AB Joseph Scarrott, an iceberg that resembled the Rock of Gibraltar. This was taken by Stephan Rehorek, a Czech sailor on board the *Bremen*.

Five days later, on the 26th of April, seven bodies and some wreckage were sighted by the steamer *Gibraltar* in 41° 13.5' N, 49° 34' W,[28] and on the 27th of April two bodies along with some wreckage were found by the steamer *Sagamore* (bound for Boston from Liverpool) in 41° 21' N, 49° 36' W.[29] Both of these locations would be about halfway around the eddy once again (about 60 additional miles of circular travel) from where the *Mackay-Bennett* had been. Although wreckage and bodies were now being scattered by both current and wind for many miles all over the sea, we do see a suggested continued rotational drift in the general area averaging about 0.6 knots of circulation.

Obviously there is no way of proving that the currents in that region in April 1912 were as I have just described. But what has been presented here is one possible scenario that gives some answers to what otherwise may seem to be very confusing if not improbable observations.

[28] Dave Gittens, *Titanic – Monument and Warning*, Chapter: "Solo And Finale," 2005.
[29] Encyclopedia Titanica Message Board-Aftermath-Fate of Debris-Lifejackets-Lifeboats etc.-Floating debris, http://www.encyclopedia-titanica.org/cgi-bin/discus/discus.cgi?pg=topics.