

A Magazine Devoted Exclusively to the Radio Amateur

## *The Story of the Transatlantics*

*By The Editor*

**T**HE signals of some thirty-odd American amateur radio stations, working on the short wave lengths and low power permitted amateurs, were heard across the Atlantic Ocean in the second series of Transatlantic Sending Tests conducted by the American Radio Relay League in December, 1921. This is a story of that achievement.

### **The First Attempt**

The possibilities of transatlantic tests were first presented to the amateur world in 1920 by Mr. M. B. Sleeper, at that time radio editor of "Everyday Engineering". It is a subject that intrigues the amateur—his greatest desire in life is to get "distance" with his equipment. It has wonderful possibilities, too, in opening the way to world-wide amateur radio. The arrangements for the first tests in February of 1921 were going merrily along, then, when "Everyday Engineering" unfortunately was obliged to suspend publication. Mr. Sleeper requested the A.R.R.L. to take over the management of the tests, which it did in order that his splendid idea might not be lost. In the limited time remaining after our Operating Department took over the management it was not possible to perfect arrangements as we would have liked, and the tests failed. Looking back at them now we believe we can ascribe this to two causes: the length of time assigned the transmitting stations was altogether too short, and most of them were spark stations. At any rate no signals were received which unquestionably could be attributed to American stations.

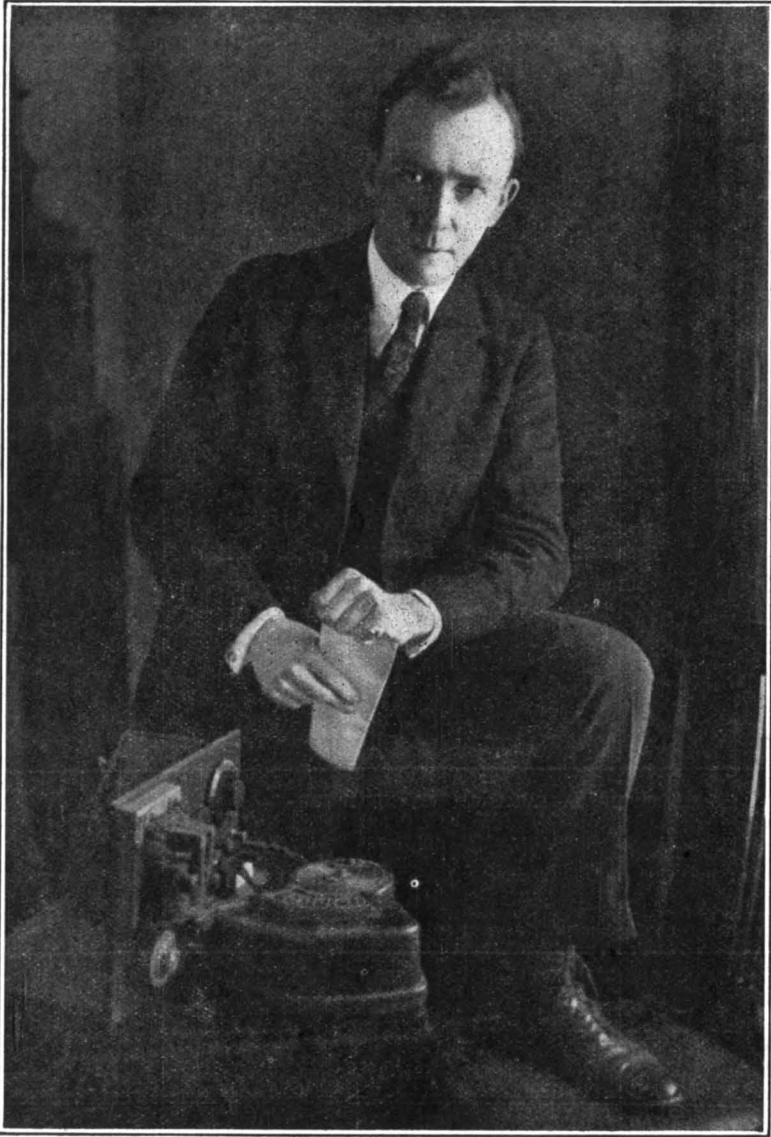
American ship-operators on transatlantic runs had heard our signals on the other side, however, and we of the A.R.R.L. were still firmly of the belief that signals could be got over on schedule. Gradually the determination crystallized to try it again,

and we even made the boast in print that if a dyed-in-the-wool American ham could be sent across the water with a good American regenerator we knew signals could be copied; in fact, we bet our new spring hat on it. Ever since then we have been answering inquiries from England as to just what a "ham" is, particularly one who has been dyed while still in the wool. But we're used to questions.

### **To Try Again**

And so the matter of additional tests was taken up with Mr. Philip R. Coursey, assistant editor of "The Radio Review", London, who had managed the British end of the first tests, and he, finding British amateurs desirous of giving the game a second go too, kindly agreed again to look after the reception end, which this year was perhaps to include France and Holland too. Plans went forward during 1921 and a brief announcement appeared in July QST, while an open invitation to all amateurs to enroll for the preliminary tests was published on page 12 of QST for September, in which the plan was explained and registration form appended.

About this time our First National A.R.R.L. Convention was held in Chicago and our Board of Direction had a meeting there at which plans for the forthcoming tests were considered. Since we were tackling the job we wanted to do a real good job of it and avoid any chances of a second failure. The desirability arose, then, of sending an American listener to Britain to supplement the efforts of the British amateurs, not only so that we might have a double chance of success and so that some comparisons might be made of the relative sensitivity of American and British amateur apparatus but also for a much more important reason—it would then be possible to make the tests really democratic,



**PAUL FORMAN GODLEY**  
**A.R.R.L.'s Successful Overseas Listener**  
from a recent photograph taken at his home  
in Cedar Grove, New Jersey

as befits our organization, for if only picked stations were to transmit on schedule, obviously the number would be limited, whereas if we could have an A.R. R.L. man there, one used to twirling a mean variometer all night long, the tests could be made a great popular event with free-for-all periods in which the whole country could be invited to participate. This idea was favorably considered and funds were appropriated to send a man to England to make it possible. An invitation was extended Mr. Paul F. Godley, of Montclair, N. J., to undertake the mission in the name of American Amateur Radio, and he was kind enough to accept. Mr. Godley is the man who first adapted the Armstrong regenerative circuits to short-wave work; he originated the variometer regenerators which have made possible the wonderful short-wave DX work of American amateurs since 1914; and he was chosen to go overseas because in the unanimous opinion of the Board he was America's most expert operator in the practical reception of short wave signals. Let it be clearly understood that an American representative was not sent merely because we feared the English amateurs weren't seasoned operators or weren't able to get us with their equipment; instead it was in order that the tests might be expanded into a big popular event without asking the British amateurs to stay up *all* night every night; and Mr. Godley went over as an auxiliary to the British efforts. The French magazine "La T.S.F. Moderne", commenting on the arrangements, suggests that we feared the British weren't sufficiently the hard-boiled owls, but that wasn't it. Incidentally, fellows, you ought to see the French for boiled owls: "des oiseaux nocturnes durs a cuire", literally, "nocturnal birds hard to cook". Have a hi wid us on tt, you tough nocturnal ornithic persons! The big idea was to make sure that American signals got thru to Britain, so that the possibilities of transocean amateur work might be helped along, and that is why Godley was sent.

### The Preliminaries

Altho it was decided to divide part of each test night into free-for-all periods it was obviously desirable to give our best stations individual schedules of considerable duration so that careful tuning could be done in Britain and positive reception be recorded. To pick the best stations which would be assigned such individual schedules, eliminating tests were conducted, and the announcement in September QST was an invitation to enter these preliminaries, the books being kept open until Oct. 12th. The hours being limited, there was time for only the better stations in these individual final schedules, and the preliminary qualification was that the

stations cover 1000 miles overland. Seventy-eight stations were entered in the preliminaries, which were conducted Nov. 1st to 5th, inclusive, an advance over the original dates made necessary by Mr. Godley's earlier sailing. The time being quite limited, arrangements for the preliminaries were conducted entirely by mail, without chronicle in QST. Instructions were given the transmitters and a thousand copies of the schedules distributed to picked receiving stations thruout our Operating Department with instruction to notify the Traffic Manager direct of all reception. Nov. 10th was set as the final date for the reception of qualifying reports, as the schedules had to be made up in advance of Mr. Godley's sailing. A station did not have to be reported by an official recorder to be eligible in the finals, however—any evidence that it had covered the requisite 1000 miles was sufficient. A number of stations participating in the prelims were heard over a thousand miles and have cards to prove it but still did not qualify, as the cards either came to them instead of to this office, so that no proof was offered, or came to this office too late. Some excellent stations, such as 1UN for example, failed of qualification thru such an accident. Other stations qualified at the last minute by rushing evidence to us, among which was 1AFV who, altho not reported a thousand miles by any of the recorders, filed a card with the Traffic Manager which showed he had covered the DX. Everyone who could show by Nov. 10th that they had made the grade was give a place in the finals, but for fairness' sake the Operating Department held rigidly to the original announcements.

### The Finals

The complete scheme for the tests was published on pages 29-32, inclusive, of October QST. For six hours each night for ten successive nights, December 7th to 16th, inclusive, transmission took place and watch was kept on the other side. Each six-hour schedule was divided into two parts, the first part, from 7 p.m. to 9:30 p.m., Eastern Standard Time, being the free-for-all, consisting of ten periods of 15 minutes each and in each period of which all the amateurs in a given inspection district called "Test" and signed. The periods were rotated so that every night a district sent at a different time, sometimes early in the evening, sometimes late, so that if the hour mattered all would have an equal chance. The schedule for these periods appeared on page 30 of QST for October.

Then the second part of each of the six nights, from 9:30 p.m. Eastern Standard Time to 1:00 a.m. of the following date, was devoted to the individual stations who qualified in the preliminaries. Sealed secret

cypher combinations were assigned these stations, with a request that they not be opened until the first night of the tests, and no information was given out as to who had qualified except to the successful contestants themselves.

The following table lists the entrants in the finals:

Call	Location	Type	Wave	Cypher
1AFV	Salem, Mass.	C.W.	200	YLPMV
1TS	Bristol, Conn.	C.W.	200	AOTRB
1RU	W. Hartford, Ct.	C.W.	200	BPUSC
1DA	Manchester, Mass.	C.W.	200	CQVTD
1AW	Hartford, Conn.	Spk.	210	DRWUF
1BCG	Greenwich, Conn.	C.W.	230	GODLY
2BML	Riverhead, L. I.	C.W.	200	FSXVG
2FD	New York City	C.W.	200	GTYWH
2FP	Brooklyn	C.W.	200	HUZXJ
2OM	Ridgewood, N. J.	Spk.	200	JVAYK
2EL	Freeport, L. I.	C.W.	200	KWBZL
3DH	Princeton, N. J.	C.W.	210	LXCAM
4GL	Savannah, Ga.	C.W.	200	MYDBN
3BP	Newmarket, Ont.	Spk.	200	NZFCO
8DR	Pittsburgh, Pa.	C.W.	200	OAGDP
9KO	St. Louis, Mo.	Spk.	200	PBHFQ
9AW	Toronto, Ont.	C.W.	200	QCJGR
1ZE	Marion, Mass.	C.W.	375	RDKHS
2ZL	Valley Stream, L. I.	C.W.	325	TGMKU
3ZO	Parkesburg, Pa.	C.W.	360	UHNLV
5ZZ	Blackwell, Okla.	Spk.	375	VJOMW
6XH	Stanford U., Cal.	C.W.	375	WKPNX
7ZG	Bear Creek, Mont.	Spk.	375	XLQOY
8XK	Pittsburgh, Pa.	C.W.	375	YMRPZ
9ZY	Lacrosse, Wis.	C.W.	260	RZQMY
9ZN	Chicago, Ill.	Spk.	375	ZNSQA
9XI	Minneapolis.	C.W.	300	SFLJT

The three and a half hours for individual schedules was divided into fourteen periods of 15 minutes each, and times assigned to each station, the periods again rotating for fairness. At a suggestion from Mr. Godley the individual stations for the most part transmitted in groups on the same wave length, two stations sending at once permitting double the time for each without jeopardizing the chance of either to be heard. Most of the special schedule stations transmitted in pairs, three being the maximum going in any one period.

#### In England

These arrangements were by no means for the special benefit of Mr. Godley but were to govern the entire tests. The arrangements in England were entirely in Mr. Coursey's hands and the data on the schedules was communicated only to him. To avoid all criticism Mr. Godley was told nothing except the free-for-all schedule, which was public information, but Mr. Coursey supplied him with a schedule of the times and wave lengths on which to listen, the same as he broadcasted to all British listeners, and kept strictly to himself the identity and cyphers of the various stations. Mr. Coursey being in complete charge, Mr. Godley was on practically the same status as any British listener and was required to submit his reception to Mr. Coursey for verification and to report thru him.

Meanwhile the greatest enthusiasm seems to have greeted the preparations for the tests, on the other side. The EX Neder-

landsche Vereeniging voor Radiotelegrafie (Holland) wrote us for particulars and published them in their magazine, "Radio Nieuws", together with recommended Armstrong circuits for short-wave reception; and "La T.S.F. Moderne" did the same thing for the French amateurs. "Wireless World" was the bulletin for the British amateurs, and it was here, of course, that the highest interest centered. Many amateurs seem to have gone to great lengths in their preparations, making special sets with many stages of tuned-output radio amplification—and we are very happy that the outcome of the tests justified their labor.

#### Godley Prepares

While these arrangements were progressing "Paragon Paul" was busy too, building special amplifiers, testing various tuning arrangements, and experimenting with different aerials. When he succeeded in making 5ZA work a relay in New Jersey without interference from New York amateurs he felt he had things around where they belonged.

On Nov. 14th, the night before he sailed, a very impressive little dinner was given for him at The Engineers' Club in New York City, where our A.R.R.L. officers and our directors within hailing distance and the officials of other radio organizations gathered to wish him success and bid him Godspeed. While the trial was to be a severe one and no man could with surety predict the outcome, optimism was distinctly the keynote and everybody was certain that if it could be done at all Paul would get signals. At this meeting credentials and written instructions were given him, together with a sealed packet for Mr. Coursey in which the secret codes and final schedules were given. There were but two copies of these documents in existence and the duplicate was locked in the Hartford safe. Until the writing of the article it was seen by no eyes in this country save those of our Traffic Manager—not even by the present writer.

Godley sailed on the "Aquitania" on Nov. 15th, amid cheers and waving handkerchiefs of assembled radio friends and relatives, and for a couple of nights out the amateur air was thick with farewells and good wishes for 2ZE, Godley's home call, for everybody knew he would be in the static-room on the "Aquitania".

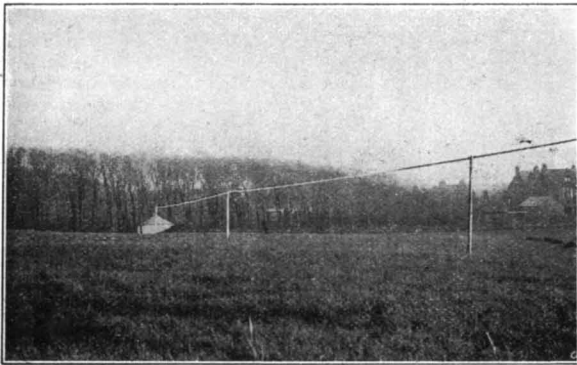
The second day out we radioed him:

"Bon voyage The entire radio world is pulling for you"—to which he replied:

*Confidence increases as distance squared  
Broadcast my heartfelt appreciation".*

Arrangements had already been made with the British authorities thru the kind co-operation of our own State Department and Department of Commerce for special authorization to Mr. Godley to bring in

apparatus and erect and operate a receiving station; and to one familiar with the British laws on radio it will be apparent that this was itself an accomplishment. Mr. Godley landed at Southampton on the 21st and proceeded to London, where he was shown every courtesy by the British radio men. He had originally planned to make use of the receiving station of Commander Phillips, near London, which was kindly placed at his disposal, but results there being discouraging he moved up into Scotland and located at Ardrossan, a thriving ship-building port and watering place on the coast to the west of Glasgow. There he erected his apparatus, accompanied by his official listener, Mr. D. E. Pearson, District Inspector of the Marconi company at Glasgow, who stood a constant watch



The Site at Ardrossan—Note the Tent.

with him during the tests and verified the reception of every signal.

Time was growing very short when Godley arrived at Ardrossan and there was no opportunity to build a shack or make any particular arrangements for comfort. Unfortunately the only good location was in an open field without buildings, and a tent was the only possible housing. This record-breaking reception, then, was done in just a tent, exposed to the elements, its only light a lantern and its only heat an oil stove, while the countryside rocked in the worst weather imaginable—cold and penetratingly raw, terrific down-pours of rain, and wild gales—the results of a cyclone which passed nearby. The physical strain and suffering must have been intense. What a debt we owe Godley for what he went thru for us!

Meanwhile it had been planned to file a message daily at Carnarvon, Radio MUU, addressed to the A.R.R.L. at Hartford and containing a brief report of reception or conditions. So great was the interest of the commercial companies in our undertaking that the Marconi officials very kindly arranged to send this report at a specified time daily, 7 a.m. British time or 2

a.m. Eastern Standard Time, and do it slowly by hand, so that the amateur world could copy it direct and so get first-hand word from Godley at the earliest possible moment. November QST told of this and gave suggestions on the reception of MUU. Carnarvon's signals are not very easy to receive, however, and so it was arranged that Godley should send "PC" messages, which means that they were to be repeated back for verification, and on this side of the water the same brand of very interested co-operation which marked the attitude of the Marconi officials in England was evident in the Radio Corporation folks and special arrangements were made that WII, the Corporation station at New Brunswick, should slowly repeat Godley's messages upon their receipt immediately after 2 a.m. Eastern Time. This made it possible for every amateur to get the dope instantly, and altho announcement of the arrangements was not published it was telegraphed our Division Managers and broadcasted thru the divisions by radio, so that thruout the country there were watch parties every night of the tests.

#### The Results

The tests are now a matter of history. In this issue we publish Mr. Godley's complete report, a wonderful document, which tells the interesting story from his end, and we do not intend to scoop it in this poor chronicle. His daily radio reports,

which were delayed 24 hours thruout the tests, really told the story. These reports, by the way, were filed over his name by Mr. Coursey, Mr. Godley wiring coded reports of his reception to Mr. Coursey for checking, after which the latter passed them on to us.

Eight British amateurs were successful in copying American signals, and that is something that pleases us immensely. At this writing we have not yet received any detailed report from Mr. Coursey but he cables us that the secret codes were correctly copied by British amateurs from 1AFV, Salem, Mass.; 1BCG, Greenwich, Conn.; 2FP, Brooklyn; 2ZL, Valley Stream, L. I.; and 2BML, Riverhead, L. I.; that during the free periods they copied 1UN, Manchester, Mass.; 1RU, West Hartford, Conn.; 1XM, Cambridge, Mass.; and 2ZC, South Orange, N. J.; and that it is probable that 1ZE, Marion, Mass., and 2ZU were also heard; a total of eleven stations. Mr. Godley brings back the rumor that 1DA, Manchester, Mass., was also copied by the British amateurs but Mr. Coursey makes no mention of it. 1BCG was heard

by five British stations. It is very interesting to note that all of these stations are C.W.—not a spark was heard by the British amateurs.

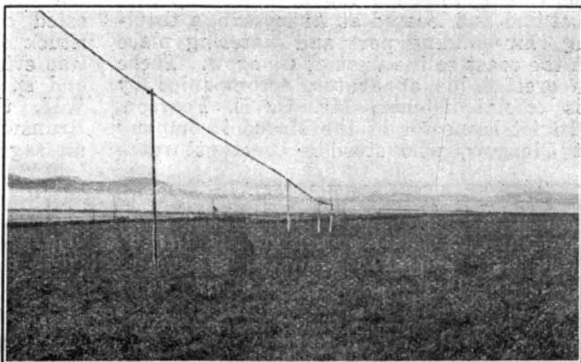
The spark stations heard by Mr. Godley are Canadian 3BP, Newmarket, Ont.; 1ARY, Burlington, Vt.; 1AAW, not yet located; 1BDT, Atlantic, Mass.; 2BK and 2DN at Yonkers, N. Y.; 3FB, Atlantic City, N. J.; 9ZJ, Indianapolis; and 8BU of Cleveland. The C.W. stations reported by him are 1RU, West Hartford; 1RZ, Ridgefield, Conn.; 1ARY, Burlington, Vt.; 1BCG, Greenwich, Conn.; 1BDT, Atlantic, Mass.; 1BGF, Hartford; 1BKA, Glenbrook, Conn.; 1XM, Cambridge; 1YK, Worcester; 2EL, Freeport, N. Y. (spark or C.W.?); 2EH, Riverhead, L. I.; 2FD, New York City; 2FP, Brooklyn; 2ARY, Brooklyn; 2AJW, Babylon, L. I.; 2BML, Riverhead, L. I.; 3DH, Princeton, N. J.; 8ACF, Washington, Pa.; and 8XV, Pittsburgh.

Mr. Godley also brings back the rumor that on Dec. 9th British amateurs in London heard a phone signing WQM play the "Humoresque" at 10:45 p.m. G.M.T., and at 10:55 a piano solo, the wave length was 200 meters. WQM is listed as the broadcasting station of the Wichita Electric Light & Power Co., Wichita, Kansas, but at this writing they have made no response to our attempts at verification.

1BCG is reported from Holland and Germany during the tests, and we are informed that 2ZL was also heard in France. Some DX!

1AAW was originally reported as 1AAY, thru a mix-up in the separate code used between Messrs. Godley and Coursey, and was later corrected by cable to us. When the report of the first night came thru, advising that 1AAY had been heard, excitement reigned supreme at Hartford headquarters. Shown by our call-book to be in Bridgeport, Conn., he could not be located by telephone nor could any other Bridgeport amateurs. So we got E. H. Armstrong, from 1BCG, to drive there in an effort to locate him, which Mr. Armstrong did in the wee sma' hours of that same morning, only to find that 1AAY had moved to New Jersey. Radio Inspector Kolster was routed out and advised us that the call had been reassigned to Fitchburg, Mass. Later that day the Chief of Police of Fitchburg, whose name incidentally also is Godley and whose people are from New Jersey (wonder if he's red-headed?), located the Fitchburg lad and got him on the telephone wire for us, but he had only a quarter-inch coil and no aerial. With what fear and trembling he must have answered the summons to report to the

Chief of Police! Then the correction came from Godley and we were off again, this time after Roxbury, Mass., with Mr. Entwistle doing the Sherlock act. Meanwhile former 1AAY from Bridgeport comes in with the dope that he has moved to Belleville, N. J., where, altho it is the Second District, he operated on that test night with four amps in the aerial and signed 1AAY. But in view of Mr. Godley's correction he was very QRZ hr. And



The "Beverage Wire," pointing out to sea across a low island.

1AAW in Roxbury hadn't operated a transmitter for six months! We thought we were up a tree at first but 1AAW and numerous Boston amateurs advise that the call *has been heard* on the air around there and that somebody else has appropriated the call. Whoever the would-be 1AAW is, he is sticking tight under cover now, as he knows he is a law-breaker, and to date he has not been located. It is a pity, too, for if he were within the law he could claim the honor of being the first station heard overseas in the tests.

1BCG seems an easy winner as the star station. In addition to being heard all over the map they got thru a coherent message on broadcast, at 3 a.m. G.M.T. on Dec. 12th, which was acknowledged by Godley by cable to this office. The first amateur transatlantic message ever sent read as follows:

*"Nr 1 NY ck 12 to Paul Godley, Ardrossan, Scotland. Hearty congratulations. Burghard Inman Grinan Armstrong Amy Cronkhite."*

Speaking of results of the tests, another result was that we won a perfectly nice spring hat from W. W. Burnham, of London, who took us up on our editorial bet before referred to, that a good U. S. ham could get signals over there. When the tests were over Burnham wired us:

*"Congratulations Cable size of hat"* and we expect soon to publish a picture of our editorial self in the new London Lid.

Many prizes were offered by British firms to the successful receivers over there, and Messrs. Burnham & Co. have offered one of their Ultra III receivers to the most successful American contestant, the award of which has not yet been determined.

### The Test Nights

It was wonderful to sit in on the tests. Goodness knows how many transcontinental records were broken, for an amateur never misses the opportunity to listen for fellows on the other side of the country when he knows they are sending on schedule. During the free-for-all one could hear district after district start up, as regular as clock-work. First the air would be full of 2's, then it would change to 3's, and as the last 3-station shut down he would wind up with a "Go ahead, 4's, give her juice!"

Those were wild nights in Hartford. A little group of us were on the job every night at the Traffic Manager's static-room, waiting on a long-wave set for MUU to send the nightly report. The air was so thick with tobacco smoke that it was hard to see how a signal could get into the room, but WII with his tape transmitter could be heard tearing along in the background, and regularly at 2 o'clock he would slow down and say "Give me Godley's message". And then with what tenseness, with what wobbly hands and stifled breathing we listened as MUU started his hand-sent report! Here she comes, fellows! Will there be call-letters? Who has been heard? That was the absorbing question! Later in the tests we got so that we knew that a check of 17 or some such small number probably meant nothing but a report of weather conditions but you should have seen us when the big message came thru with a check of 94. Oh, Boy, that meant *signals!* And there were eighteen of 'em! And of course the same scene was being enacted in countless radio shacks all over the country.

About 2:05 the telephone line would be getting hot and what with press reports, telegrams to file, countless long-distance calls from everywhere, there was no use going to bed. The newspapers are wild for radio dope these days and our A.R.R.L. got lots of publicity and Amateur Radio a big boost up the ladder from these tests.

### In Appreciation

Paul Godley returned to America on the "Olympic" on Dec. 28th, a conquering hero! He was met at the pier by many of those who saw him off and an informal luncheon was given in his honor at the Hotel Pennsylvania. The faith that his friends put in him had been more than justified. His niche in the Radio Hall of Fame is secure forever. With deepest gratitude we acknowledge our binding indebtedness to Mr. Godley, for the personal sacrifices he made to act as the representative of American amateurs overseas; for the suffering

he went thru in their name; for the wonderfully successful job he did in spite of difficulties. And our congratulations; Paul—long may you radiate!

Our deep thanks are also due to Mr. Coursey for the admirable way in which he organized the British end; to Mr. Coursey and numerous British radio men for the courtesies shown Mr. Godley; to the British listeners, one and all, for the interest that made the tests possible; to our own Secretaries of State and Commerce for their kind co-operation in getting Mr. Godley thru the miles of red tape; to the British post-office authorities for the permits so graciously granted; to the commercial companies on both sides of the water, Radio Corporation men in general, and in particular to Traffic Manager W. A. Winterbottom of the Radiocorp and Mr. Henry W. Allen, joint general manager of Marconi's, Ltd., for the co-operation that made the special MUU and WII broadcasting arrangements possible; and to Canadian and American amateurs themselves for their good sporting spirit—and our congratulations to the successful ones! All share in writing a glorious page in the history of Amateur Radio.

### The Future

It is with much trepidity that we venture to talk of the future. Who can say? But surely these accomplishments open the road to broader field of Citizen Radio. The scientific world is startled at our A.R.R.L.'s achievement. In the most graphic way we have demonstrated the high radiation efficiency of the short waves. To put a message across the Atlantic on less than one kilowatt! *It was done.* To cross the Atlantic on antenna powers of fifty watts or less! *It was done.* To get over on wave lengths sometimes under 200 meters, with our aerials that are as grasshoppers to the commercial stations! *That too was done.*

Some of the stations had remarkably low power. But they used C.W. and one of the greatest lessons to be learned from these tests is how very much better C.W. is than spark.

We sincerely hope that as a result of these tests amateurs not only in Britain but on the Continent as well will be inspired with the ambition to get into the relay game and duplicate our feat in the reverse direction, giving us the opportunity to repay our debt to them; that, being shown possible, one-way amateur traffic to England and other countries may begin soon on schedule; and that the British authorities in particular will be so impressed by the potentialities of such work as demonstrated by our tests that the amateur restrictions in that country may soon be sufficiently modified to give hope of successful two-way amateur communication across the Atlantic.

That will be the fun, eh, fellows—to sit

at the old set on a cold winter's night, the bulbs burning cosily in front while the generator purrs sweetly in the corner, the old cob pipes neatly filled in advance and set in a row for a hard night's work—and then clear England, Scotland, France, and Holland in turn! (No, we never take a

drop of stuff like that, and we really believe that such things some day will come to pass.)

Surely radio has been given added impetus by these tests, and certainly the day of International Private Radio has been brought closer!

## **Official Report** **on the Second Transatlantic Tests**

**By Paul F. Godley**

**M**ENTAL processes during great moments are extremely complex and I shall never be able to fully recount those of mine, either upon the memorable occasion when, amidst the inspiring farewells of a host of renowned amateurs, the "Aquitania" bore me towards an unknown professional fate, or those of that other and greater moment, when without regard for the atrocities of the Scottish night the first American amateur signal finished its 3,500 mile journey at Ardrossan.

On the first occasion I was overwhelmed with a wish that some fairy power might sweep twenty thousand "hams" to a place beside me, while on the second it was with the utmost difficulty that I restrained a joy which cried for the slam of a switch, the mad whine of a motor, and the crazy stuttering of a key. No sinking tramp at sea ever bewailed its lack more than I bewailed it then.

The "Aquitania's" sailing marked the beginning of a short respite from a physical strain under which work, plan and preparation had placed me. No one else will ever know how much I needed sleep, and I began taking it in large doses. On the other hand, the first signal brought with it welcome and almost complete mental relief, for five nights of listening to static and high power station harmonics near London had left me in a somewhat dubious frame of mind, which may be judged from the fact that all thoughts of sight-seeing were dropped forthwith—a trip to Paris which had been planned was given up, and I began to muster meteorological "dope" from every quarter.

The first signal also ushered in a new period of physical strain, for it was found necessary to set up equipment under an indifferent tent, in an open field near the beach, and the test period was attended throughout by high, gusty, changing winds, heavy downpours, and a chill damp which drew heavily on one's reserve energies. So far as I know, for an American, there

is but one comfortable place in winter in all the British Isles. That place is in bed—with a hot water bottle at your feet. Hospitality, of which I found a plenty everywhere, will warm the cockles of your heart, but it's no good for the joints, so those whose hospitality I sampled secretly complained of gas bills.

It seems to me now that the most remarkable phase of the entire undertaking lay not so much in its complete success but rather in the thoroughly whole-hearted co-operation encountered at every step—both during the formation of plans and during their execution—and before following through this narrative every American relay man will be glad to recognize a debt of gratitude towards all those men and those organizations who seemed to find *pleasure* in doing *anything* to insure success.

It was generally known that various American manufacturers had lent their full support to the project. Sensitive, rugged Baldwin 'phones did their excellent bit. None in England could equal their ruggedness, and none were more sensitive. The small precision wave-meter of the General Radio Company checked to a hair on 200 meters with the unusually fine standard owned by Mr. Frank Phillips, of Wembly Park, London. Burgess batteries took to the wet and muck without a whimper. The A. P. amplifier tubes I had used in tests on this side were still intact and carried on throughout the whole procedure. The Radio Corporation's U.V.200 detectors functioned as gas content tubes in a way which was surprising to British amateurs who saw them working, while the Paragon Super-heterodyne and regenerative receivers pulled in signals in a manner which astounded everyone including Inspector D. E. Pearson, of the Marconi Marine Communication Company, Ltd., who was checking operator throughout the test.

During formation of plans, encouragement was offered by a full score of prominent radio engineers, and everyone was