

Third Radio Conference Makes for Better Radio Service

By CARL H. BUTMAN

THE third annual radio battle ended Oct. 11 at Washington, D. C., and the clean-up squad of supervisors and technical experts has finished its work re-zoning stations and reallocating wavelengths. Practically everything went through and in general the radio public and industry will be better served in the future.

The first report of the Conference was made by Mr. W. D. Terrell, Chief Supervisor of Radio of the Department of Commerce, who is chairman of the sub-committee on general allocation of frequency or wavelength bands. The allocation for marine communication allows ship communication between 600 and 1,051 meters with wave bands provided for radio compass stations at 800 meters and radio beacons at 1,000 meters, with suitable protecting bands on either side. It was recommended that ships be no longer required to maintain the 300 meter adjustment as required by international regulations. The wave band reserved for marine telephone, colleges and Government use from 1,051 to 1,579 was continued. Wave bands from 1,579 to 1,817 meters were assigned to point to point and marine use for spark, C.W. and I.C.W., and 1,817 to 1,910 meters for use of point to point and marine, C.W. and I.C.W. non-exclusive. 1,910 to 2,500 meter length is reserved for the exclusive use of marine communication on C.W. and I.C.W. The band for Government use between 2,500 and 3,150 meters as fixed by the previous Conference, was left unchanged. The band for broadcast purposes was extended to include 200 to 545 meters and cleared from all other types of service, thereby permitting it exclusive use for broadcasting.

The radio amateurs were allowed to retain the wave bands previously assigned, with slight changes. They were assigned 150 to 200 meters; 75 to 86.6 meters; 37.5 to 32.8 meters; 18.7 to 21.2 meters; 4.6 to 5.3 meters. These allocations were made for C.W. and I.C.W. and telephone operation only.

Dr. George K. Burgess, Director of the Bureau of Standards, reported as chairman of the sub-committee on allocation of frequencies to broadcast stations. This allocation does not differ except in degree from the allocation now in force. The extension of the broadcasting service to 200 meters allows a large number of simultaneous, non-interfering communication channels in this class. It was recommended that the present Class C licenses be discontinued, after November 15, 1924. This will make available several new channels for Class B broadcasting and will eliminate one of the most important causes for congestion in the broadcasting band. It is also recommended



Hon. Herbert Hoover, Secretary of Commerce, opening the Third National Radio Conference with an important talk on the vital problems of radio. © Henry Miller News Picture Service, Inc.

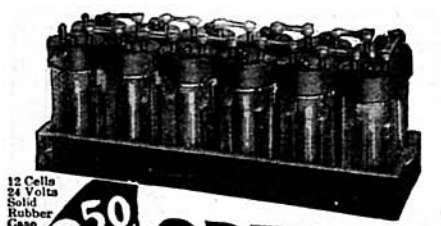
that the frequency assignments on the Atlantic coast be repeated on the Pacific coast. This has been shown to be practical in the experience of the Department. The zoning system of the United States was, therefore, changed in minor degrees to take care of this alteration and allows a large number of frequencies for the congested areas. This new allocation makes possible 63 Class B channels, 32 Class A channels and a new class is created and given five channels. This latter class includes all broadcast stations having a power of 1,000 watts or less. It is proposed that instead of designating stations as Class B and Class A, the three classes be designated as Class 1, now Class B; Class 2, now Class A and Class 3, which are local low power stations. The plan retains all of the principles of the present Class B assignments; that is, the 50 kilocycle separation in each zone and minimum of 20 kilocycles separated in adjacent zones. It is further recommended that in a given locality not more than two Class 1, now Class B, stations be licensed on a given frequency. Any additional applicants should be temporarily assigned to frequencies in the Class 2, now Class A, band, until a frequency is available. Thus, there would be a possible maximum of 126 Class 1 stations. These changes in the allocation of frequencies to broadcast stations require that several alterations be made in existing assignments. Such changes are inevitable, but the reassignments should be made. It is recommended that a small continuing committee be designated by the Conference to remain in Washington and collaborate with radio supervisors in a reassignment of the broadcast station frequencies in accordance with the recommendations of this Committee.

General George O. Squier, formerly Chief Signal Officer of the United States Army, reported that the work of Subcommittee No. 3 on general problems of radio broadcasting was practically completed after three extended sessions. This report states that due consideration has been given to the class of programs broadcast from various stations.

(Continued on page 1106)



President Coolidge addressing delegates at the Third National Radio Conference. He said the Federal Government would stand for no monopoly of the air. © P. & A. Photos.



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responsible. An engineer had disregarded a danger signal, a brakeman had failed to properly close a switch, or some similar little carelessness or neglect had been the primary cause for such an accident. Obviously, with an efficient system of continuous train control, such accidents could never occur.

Many prominent railroad men, as well as numerous electrical experts have great faith in the early development of a practical train control system. They feel that it is but a question of time before our railroads will consider train control in the same sense that they now look on block signaling, indispensable. The Clark organization is making rapid strides in its efforts to offer the first perfected system of automatically controlling railroad trains, and it would seem that with properly directed energy and concentrated effort, surrounded by a capable development staff, they should early achieve success.

Multi-Stage Radio Frequency Amplification

(Continued from page 930)

In Fig. 30 we have reproduced the arrangement of Fig. 29 in a manner which may be a little clearer to some. We have now shown the grid to plate capacity of the tube by the condenser C_3 , while C_4 represents the neutralizing or balancing capacity which actually consists of a real condenser. In this circuit it will be seen that the point G will, as far as any amplified currents in the plate circuit of a tube are concerned, always have the same potential at the point S and therefore the same potential as the filament of the tube. By

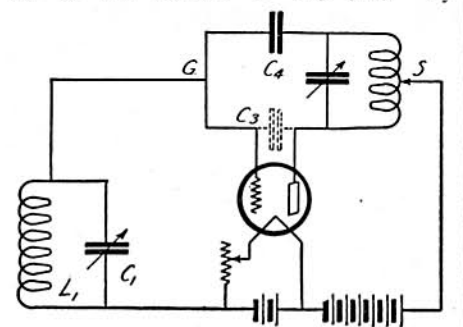


Fig. 30. A more lucid drawing of the circuit of Fig. 29. Inherent capacities are represented symbolically so that the action of the circuit may be clearly understood.

connecting the middle point between C_3 and C_4 to the grid of the tube we ensure that oscillations in the plate circuit of a tube will not in any way effect the potential of the grid, the potentials on which will now be simply those due to the oscillations in the circuit $L_1 C_1$.

The arrangements of Figs. 29 and 30 may be reversed so that the plate circuit remains normal, but the grid circuit has a middle tapping to enable the neutralizing electromotive forces from the plate circuit to compensate for the grid to plate capacity of the tube.

(To be continued)

Third Radio Conference Makes for Better Radio Service

(Continued from page 901)

After an extended discussion on the details of making recommendations to the Conference it has been deemed advisable for the Department to follow a "hands off" policy regarding material broadcast, as it is believed that each station desires to cover a certain field and to entertain or educate a

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Mr. L. E. Browne, writing in the New York Sun Radio Section of August 30th, regarding the reception of Broadcasting from Lieut. Brandt's De Havilland plane speeding at 75 miles per hour, 3000 feet above New York, states:

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certain class of people. To regulate the programs under these conditions would mean censorship, and official censorship is not recommended.

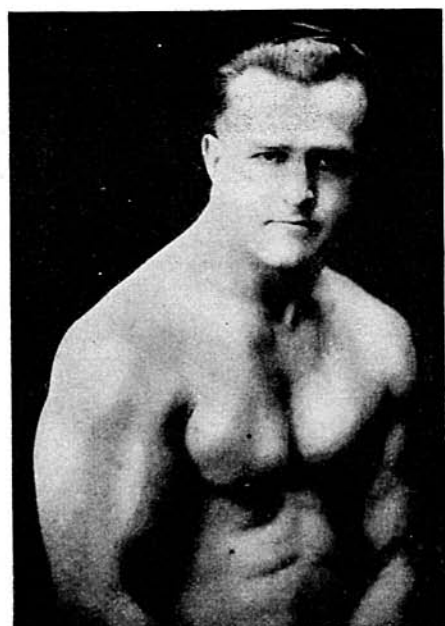
In regard to the changing of the requirements for operators' licenses, it has been recommended by this Committee that the present experiment and instruction grade of license be made more elastic if possible to permit the holders of such licenses to operate broadcast stations when such licenses are issued to professors of physics and fellows of the Institute of Radio Engineers, and men of equal qualifications. It has been deemed advisable that the operators employed at broadcast stations throughout the country should not be required to secure the same class of license as required for marine communication. The present so-called marine license insists that the holder have a thorough knowledge of all modern systems of radio communication, and as radio broadcasting and the apparatus pertaining thereto is a science within a science, this Committee recommends that a new class of operators' licenses be created, different from the license required of other types of service and the examination for it be based upon the needs of the broadcasting service.

The question of increased power for broadcast stations has been considered in detail, and the Committee has decided: "to determine the advisability of permitting the expansion of broadcasting by the employment of increased power beyond that prescribed in the regulations for Class B stations, and to permit the use of apparatus for this purpose to any individual and to remove certain limitations now prescribed for Class B stations, and for the purpose of observing what interference, if any, might result in public broadcast reception in the various localities, this Committee recommends that a new class of license be established and that licenses in this class shall be granted by the Secretary of Commerce, who shall have discretionary power to prescribe the type of apparatus, location, frequency, power requirements of operation of such stations, and that licenses for such stations shall be granted on an experimental basis only, and for such period or periods of time as the Secretary of Commerce may determine.

Although the Government refused to take off the lid in regard to power limitations, experimental licenses for high-power broadcasting are assured and it is up to the radio engineers to show the radio supervisors and the listening public the benefits of high-power broadcasting. The engineers of the Radio Corporation, who propose to erect a 40 to 50 k.w. station outside of New York in the near future, are going forward with their plans and will request the first super-power broadcasting license under a revised Class D or development permit. As soon as the technicians work out the details of minimum interference and set up the station, the public, within a range of a thousand miles of New York, at least, will have an opportunity of listening in on the R. C. A. super-broadcaster. No doubt, it will also carry to Europe and South America as well as all over the United States. If the inspectors or the public find that this station interferes seriously with the reception of other stations, the Department will cause it to close down, since this is a requirement of the special permit.

It is also probable that nine smaller broadcasters will also apply for permission to broadcast with 5 k.w. sets under the same conditions, and, as was pointed out, a broadcasting system of pure radio may soon be competing for radio popularity with the chain of the inter-connected stations served by the American Telephone and Telegraph Co., which has made possible nation-wide broadcasting.

Among the important decisions reached were: The addition of 30 wave channels for



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broadcast stations, bringing the total to 100; the removal of the marine sparks on 300 meters from the broadcast band, and the designation of 600 meters for calling and distress calls only, clearing the air programs of code interference. A re-classification of broadcasters and the transfer of all Class C stations from 360 meters, improves the situation further, while the re-zoning of the country into six zones will further aid broadcast operation. This will provide a separate zone for the New England States, including New York City and part of New Jersey. Zone Two will comprise the remainder of the Atlantic states, Pennsylvania, West Virginia, and the western part of New York. Zone Three, Michigan, Ohio, Illinois, Kentucky, Tennessee, West Georgia, Alabama and Mississippi; the Central States are divided horizontally, the southern states forming Zone Four, and the northern, Zone Five; all the Pacific States with Idaho, Utah and Arizona, constitute the Sixth zone. When assigning experimental stations high power licenses, the Department intends to use this system and in assigning new Class 1 station waves.

Marine communications will be handled on 660, 730, 875 and 706 meters, giving the ships five channels instead of two, also removing coast-wise interference and congestion. Amateurs retain substantially the same wave bands as heretofore, but benefit by low wavelengths assigned temporarily by the Department recently; all of which assures the amateurs an increase in channels over what they had a year ago, and permits greater latitude in 24-hour operation.

The conference voted not to interfere with broadcast programs, discouraging censorship definitely. The conferees found that simultaneous broadcasting of national events is practical over a large area and believes that nation-wide broadcasting by interconnecting stations deserves encouragement.

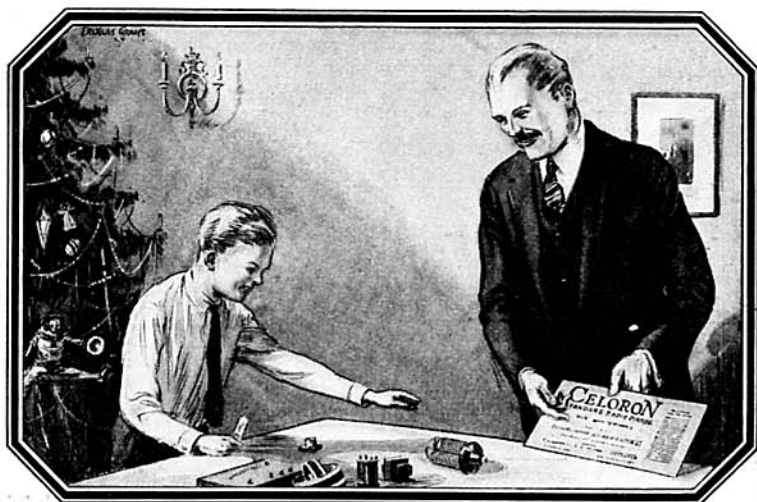
Additional funds for the administration of matters radio were urged of Congress in a special plea of the whole Conference.

Hiram Percy Maxim, President of the American Radio Relay League, reported as chairman of the subcommittee on amateur problems. It was recommended by this committee that the use of receiving sets capable of radiating be discouraged for use on the short wave relay broadcast band.

In order to eliminate as far as possible the interference from amateur transmitting sets, it was recommended that, except in case of transmitters using coil antennas or loops, of transmitters using coil antennae or loops, radiating system or a device producing an equivalent effect be required in all amateur transmitters. All of the amateur bands shall be open to telegraphic communication by tubes or devices producing similar effects, except those outlying forms of I.C.W. obtained by mechanical interruption on radio frequency circuits. A band of 170 to 180 meters was assigned non-exclusively to amateur radio telephone and I.C.W. stations which employ apparatus in which one of the radio frequency circuits is mechanically interrupted. This keeps those types of amateur transmitting sets which are capable of producing the greatest amount of interference well within the largest amateur band.

Previous to his remarks, Secretary Hoover had been thanked personally for his service to radio science, on motion of Earle C. Anthony, of California, who said: "Mr. Hoover has practically given up his time day and night to this work, and it shows the interest of our Secretary in radio. I would, therefore, like to call for a vote of thanks to Mr. Hoover for his personal interest." The motion was seconded and carried with applause.

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