

# HEINL RADIO BUSINESS LETTER

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## BBC TELEVISION STATION TESTING: A DESCRIPTION

The long-heralded television station at Alexandra Palace, London, began operating on an experimental basis the middle of last week with a twice-daily program for reception at the Radio Exhibition at Olympia. While it is too early to get any substantial reports on the operation, the following description of the British Broadcasting Corporation station has been rushed to the Heintz News Letter by M. A. Frost, chief of the BBC public relations division (a technical description of the station is carried in another portion of the letter):

From a hill 306 feet above sea level the BBC's new television station dominates London and a large portion of the home counties. It is built into the south-eastern corner of Alexandra Palace--a north London landmark and pleasure resort for more than sixty years--and from the large bay windows of the upper offices below the aerial nearly all London can be taken in at a glance. The importance of height in this connection can hardly be over-emphasized, for under normal conditions the range of the ultra-short waves used for television is extended as the height of the transmitting aerial is increased.

Surmounting the reconstructed east tower, itself 80 feet high, is the tapering lattice mast, rising to a height of 220 feet. Thus the aerial array for vision transmissions, which is mounted at the summit of the mast, is more than 600 feet above the sea level. Immediately below the vision aerial is the aerial for the accompanying sound transmissions.

The new station fulfils the recommendations of the Television Advisory Committee appointed to consider the development of television in Great Britain. Provision has accordingly been made for alternate experimental transmission by the systems developed by the Baird Television Co. and the Marconi-E. M. I. Television Co. respectively. Each company has provided a complete television system, including both vision and sound pick-up apparatus and the television transmitter itself. The BBC has been responsible for the sound transmitter and its associated aerial, both of which were manufactured by Marconi's Wireless Telegraph Co.

In its main essentials, therefore, the equipment comprises a television studio for each system, with an associated control room and ultra-short wave television transmitter; and, in addition

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an ultra-short wave sound transmitter common to both systems.

To these bare necessities, however, much has been added to provide, in the words of the Television Committee, "an extended trial of two systems, under strictly comparable conditions, by installing them side by side at a station in London where they should be used alternately--and not simultaneously--for a public service." Provision has been made for the comfort of artists in the shape of dressing rooms and a restaurant, for staff accommodations, for the viewing and editing of films in a miniature cinema, for the storing of properties and scenery, and for many other adjuncts necessary to a smooth-working program service.

The entrance hall is at the base of the tower. Nearest to the entrance hall is the Marconi-E. M. I. television transmitter which, like its Baird equivalent, operates on a frequency of 45 megacycles per second (wavelength: 6.67 metres). All the apparatus at the station is finished in grey cellulose and chromium.

Next is the sound transmitter hall which accommodates an ultra-short wave installation of orthodox design for radiating speech and music accompanying the vision signals of both the Baird and Marconi-E. M. I. systems. Its operating frequency is 41.5 megacycles per second (wavelength: 7.23 metres).

Between the sound transmitter and the Baird plant is the film projection theatre, or miniature cinema, in which film excerpts can be selected and timed for inclusion in the transmissions. At least thirty people can be comfortably accommodated.

The Baird transmitter hall, with its control panel and array of generators and amplification stages, is at the southwest end of the corridor. Beyond this, at the southwest extremity of the BBC section of the Palace, is a large area intended either for scenery construction or for televising such objects as motor cars and animals which cannot be brought into the studio or televised outside. Lorries can drive straight in. A large opening in the roof enables it to be lighted and, if necessary, televised from above. Lifting tackle can take up scenery and properties weighing a ton through a trap door in the roof to the second dock, 25 feet above.

An interesting feature at this point is the ramp or sloping runway down which the television camera can travel to a concrete "apron", approximately 1,700 square feet, on the terrace outside, forming a platform for televising open-air performances or special experimental programs.



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The two main studios, one for use with each of the television systems, are 70 feet by 30 feet by 25 feet high. Acoustically, the studios are rather more 'dead' than is general practice for sound broadcasting, since the introduction of scenery necessary for television will, in effect, control the acoustic characteristics. The walls of the studios are covered entirely, except for door and window openings, with sheets of asbestos compound which has a high degree of sound absorption. As this material has a rather rough surface, it is covered up to about 10 feet from the floor with a protective fabric which is designed not to affect the sound absorbing properties of the compound. The ceilings of the studios are treated with building board, as commonly used in ordinary broadcasting studios. The floors are covered with black linoleum over which can be laid any type of flooring which may be required.

Several microphone points are installed in each studio, and they are arranged to allow the use of any type of microphone which may be required. Portable stands of the 'lazy-arm' type are also provided.

Each studio is fitted with two stages equipped with curtains, the detailed arrangements of the stages and curtains being different in the two studios, to take account of the different requirements of the two systems.

All the lighting in both studios is at present of the incandescent lamp type, using spot and flood lighting, on similar lines to that employed in theatres and film studios, but modifications are contemplated with developments in television technique.

Ventilation has been provided in the studios by means of extract fans situated in enclosures formed on the adjoining colonnade. These extract the air through a series of gratings fixed in the ceilings and connected with the fans by trunking, the intake for fresh air being provided by openings in the upper part of the windows, fitted with filters that clean the air and deaden extraneous noise; the lower part of the windows are covered by sound-proof shutters during performances. Sound deadening ducts are connected with the outlets. The ventilation is sufficient to keep the studios at a moderate temperature when full lighting, reaching a maximum of approximately 50 kw., is used, and to allow the temperature to be adjusted within normal limits. Constant temperature and humidity cannot, of course, be obtained irrespective of outside air conditions, as can be done with the more elaborate air-conditioning plant at Broadcasting House.

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## MUTUAL CONTINUES EXPANSION, ADDING FIVE STATIONS

Continuing its expansion into a nation-wide network, the Mutual Broadcasting System has added five new mid-western stations as affiliates. The stations are:

KWK, St. Louis; KSO, Des Moines; WMT, Cedar Rapids; KOIL, Omaha; and KFOR, Lincoln, Nebraska.

WLW, Cincinnati, has severed its corporate connection with MBS but will continue to be an outlet for both commercial and sustaining programs.

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## CANADA REFUSES ADS, SELLS TIME TO POLITICIANS

The Canadian Broadcasting Commission does not accept advertisements, but it "sells the air" during part of the day to those who wish to "put over" their own views, a correspondent of World-Radio, BBC publication, points out. In Canada before the last general election the amount of time "sold" for electioneering speeches was enormous. The more money in party coffers the more "air" the party bought.

This selling of the air necessitates programs being absolutely to time. "Imagine the feelings of a public health speaker, with two hundred words left of his appeal for sane feeding, cut off as the clock struck, to make room for someone offering fancy foods!" he said. "This really happened. A protest from the health department brought the answer that at that hour the 'air was sold'. It no longer belonged to the Commission, and they could not allow the doctor to use it.

"Thoughtful Canadians regret advertising 'on the air' but think that the improvement in the programs justifies it," he added. "A music-lover said that he would bear any advertisement to hear a good opera once a week (paid for by an advertiser who has three minutes in which to mention his goods at the end), and no broadcasting commission could afford such a thing. He was staggered to hear that the BBC put over operas and Promenade Concerts nightly. Other Canadians, also, spoke almost with reverence of the BBC educational programs. But many also distrust the idea of 'the air' being completely under one rule. They think that the individual should have his opportunity.

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## NEW YORK EQUIPPING FIRE BOATS WITH RADIOS

The New York City fire department will soon be a model for the nation in the transmission of fire alarms to the fire boats that patrol its harbors.

Commissioner John J. McElligott announced this week that construction will begin within a few weeks on a two-way radio system connecting the city's nine fire boats and a transmitter to be erected in the Fire College building in Long Island City.

This will mark the first step in a program to link the various units of the department by radio. McElligott predicted the eventual use of television for the transmission and reception of alarms, and said he already had requested the Federal Communications Commission to set aside certain wave lengths.

"This policy," he declared, "is in keeping with that of the present administration to take advantage of the latest developments in communicating intelligence by radio. So far as is known, no Fire Department in any other city will have such an extensive system."

The fire boat radio equipment has been provided for by a \$30,000 allotment in the 1936 department budget, McElligott explained. He said he was considering a request for additional funds with which to install similar equipment in thirty-five department cars. His department also plans eventually to install a short-wave receiving set in each fire house.

"It can readily be seen," he asserted, "that with such equipment any interruption caused by storm or disaster to the telephone or telegraph lines would not entirely cripple the means of communication between headquarters and the fire-fighting force."

Advertising for bids on the work will be started in a few days, he added. The wave-length of the new service has not yet been determined by the Federal Communications Commission.

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## GOEBBELS ISSUES 5 RADIO COMMANDMENTS

Dr. Joseph Goebbels, German Propaganda Minister, warmly praised the radio as a government instrument and issued five commandments for radio officials at the opening of the radio exhibition in Berlin on August 28, according to the New York Times.

"It is not true that the prodigious dynamic forces of this century are mankind's enemies," he said. "They are man's friends and servants when submitted to a wise and superior political regime that controls them, leads them and uses them according to plan.

"A new form of politics and economics is demanded. The Socialist racial State with a national character is the result of this political revolution.

"Under the altogether new fashion of leading humanity, such as has been introduced for the first time by the Nazis, the radio is one of the most modern and most important instruments for education control and the cultural disciplining of the people. Therefore, the radio is not controlled in Germany as in other lands by a technical Ministry but by a political Ministry--the Propaganda Ministry."

Dr. Goebbels' list of five commandments for radio officials are:

"The program must be varied, for it has a mass audience. Radio must not set its level too high or too low. Radio must mix skillfully teaching, inspiration and recreation, for the number of those wanting to be fed Kant or Hegel is too small for consideration. The people's education must never be submitted to the principle of all or nothing.

"It is detestable to regard disdainfully those standing in a lower cultural level."

The Minister announced that the number of registered radio hearers had risen from 6,516,732 to 7,404,144 last year. During the Olympics the Minister reported that broadcasts were made regularly in twenty-eight languages. In all 3,000 direct broadcasts were made and 10,000 by the use of wax plates. Five hundred direct broadcasts were in German and 2,500 were distributed over foreign chains.

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If present plans materialize the Canadian Radio Commission's new 5,000 watt transmitting station being erected on Lulu Island, B. C., to serve the west coast territory, will be completed in November, according to D. G. McKinstry, Commission architect in charge of the project.

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## THE BBC TELEVISION STATION: TECHNICAL DESCRIPTION

The technical aspects of the BBC television station now operating experimentally from the Alexandra Palace, London, presents some interesting developments, which are described herewith by M. A. Frost, BBC public relations chief (see lead story):

The television mast, from which the transmissions emanate, is situated on top of the Alexandra Palace tower, 300 feet above ground, the steelwork reaching 215 above the peak of the brick tower.

The mast is tapered for a height of 105 feet above the tower, square in section, the sides of the square being 30 feet at the bottom and 7 feet at the top of the tapered portion. At this point, to suit the special design of aerials, the section changes from a 7-foot square to an octagon 7 feet from face to face, and maintains these dimensions up to the top of the mast.

Two separate aerial systems are carried by the tower, one for vision and one for sound. Both systems are similar, each consisting of a number of aerial elements arranged round the mast, those for vision being above and those for sound beneath. Each aerial consists of eight push-pull end-fed vertical dipoles spaced equi-angularly round the mast, together with a similar set of dipoles used as reflectors to avoid induced currents in the mast structure and so increase the radiated field. The aerials are connected to junction boxes, with which are associated a number of impedance-matching transformers to correct the aerial response. The aerial systems are connected to the transmitters by means of two 5-inch concentric feeders which pass down the mast and along to the transmitting rooms, a change-over switch being provided so that either vision transmitter can be connected to the vision aerial.

The transmitter to radiate the sound accompanying the vision program is capable of operating over a band of frequencies from 35 to 50 megacycles, the working frequency being 41.5 megacycles, and the output power rating 3 kw. at 90% peak modulation (Copenhagen rating).

The transmitter is built in four separate units, each unit being housed in a metal cubicle. The master oscillator (ensuring a stability of plus or minus one part in 100,000) operates at half the carrier wave frequency, and is followed by one frequency-doubling stage and five high-frequency amplifying stages. Modulation is effected at the anodes of the final high-frequency amplifier by choke control; modulator, sub-modulator and sub-sub-modulator stages of the conventional type being employed. In the final

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high-frequency stage, two C.A.T.9 water-cooled valves in push-pull are used, and in the main modulator stage three C.A.M.3 valves in parallel.

The transmitter is designed to give high quality sound reproduction and will enable full advantage to be taken of the wide frequency band which is available at this low wavelength. The frequency response of the transmitter is substantially flat between 30 and 10,000 c/s, the maximum departure being less than 2 db. over this range, while the low frequency harmonic content introduced by the transmitting apparatus is very low. The low-frequency input stage (the sub-sub-modulator) is designed to operate from a signal which has an amplitude equivalent to that employed as a standard at all BBC transmitters.

In an ultra-short-wave transmitter special precautions have to be taken to reduce spurious radiation to a minimum, and particular attention has been paid to the screening of the transmitting units in order to insure this. In addition, the high-frequency energy is fed to the aerial through a concentric copper-tube feeder which is non-radiating. Consequently, fields due to the transmitter other than the main field produced by the aerial itself are practically non-existent. Similar precautions are taken with the vision transmitters and feeder system.

All the valve filaments are heated by direct current from a motor-generator set, having an output of 300 amperes at 20 volts, the filaments of the early stages being fed through voltage-dropping resistances.

The main H.T. supply at 6000 volts D.C. for the penultimate high-frequency amplifying stage, the power-output stage and the modulators is obtained by means of a hot-cathode mercury-vapour type rectifier fed by a step-up transformer and provided with adequate smoothing circuits. Control of the high-tension voltage is carried out by means of a remotely controlled induction-regulator.

All auxiliary H.T. and grid-bias supplies are obtained from metal rectifiers, fed from transformers and provided with suitable smoothing circuits.

The main controls are grouped on a control table so that one operator is able to manipulate all the power supplies to the transmitter. All switching operations are effected by remote control, and the switch-gear is fully interlocked to prevent damage to the transmitter by the application of power-supplies in the wrong sequence. In addition, there is a sequence-starting switch which insures that sufficient time elapses between the application of



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each succeeding voltage, so as to allow valves and other apparatus to become properly warmed up before the mains H.T. power is applied. All electrical apparatus is fully protected by means of over-and under-voltage relays and water-flow monitoring devices so that, in the event of the failure of any supply, the whole apparatus is automatically shut down and cannot be restarted until the deficiency is remedied. Additional interlocks ensure that the whole operation of 'running-up' is restarted at the beginning, in the event of such a failure.

The provisions for the protection of personnel are such that it is impossible for any person to obtain access to any of the transmitter units without first switching off all dangerous supplies and earthing the apparatus. No supply can thereafter be reconnected to the transmitter until all gates have been reclosed and locked.

The power supply for the whole building is obtained from the mains of the North Metropolitan Electric Power Supply Company at 415 volts 50 cycles 3 phase, and is fed through a main oil-circuit-breaker and distribution switch-gear.

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A favorable report on the application of Donald A. Wike and H. E. Studebaker, of Baker, Oregon, for a construction permit to build and operate a broadcasting station on 1370 kc., with 100 watts power night-time and 250 watts daytime, unlimited hours, was filed with the FCC this week by Examiner John P. Bramhall. It was made subject, however, to the granting of an application by KUJ, Walla Walla, Washington, for permission to transfer from 1370 to 1250 kc.

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Unfavorable reports on the applications of Gomer Thomas, Bellingham, Washington, the Port Huron Broadcasting Co., of Port Huron, Michigan, for permits to build and operate stations on 1420 and 1370 kc., respectively, were filed with the FCC this week by Examiner John P. Bramhall.

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## FCC NAMES NEW AIDE IN TELEPHONE INQUIRY

The Communications Commission on September 1 announced the appointment of Carl I. Wheat as an Associate Attorney in the investigation of the American Telephone and Telegraph Company. There are reports that the investigation might take a new turn.

Wheat will supervise the rates and tolls section of the inquiry. He won recognition by effecting several utility rate reductions on the West Coast.

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## MAYBE BRITISH STILL BELIEVE INDIANS ROAM THE U. S.

For years after the last Indian tribe had been killed off or segregated on a governmental reservation the average Englishman believed that the United States was beset with marauding redskins. Now, it seems, the British Broadcasting Corporation is depicting Dixie in a late 19th century tempo.

Publicizing a program of Negro songs and spirituals by John Payne, an American jazz orchestra leader, and his Jubilee Singers, the BBC comments:

These artists have picked cotton in past days, and have taken part in the frequent evening festivities that follow a day in the fields. 'Dixie Land Whar I Was Born In', as their program is called, will portray a happy sidelight on the simple enjoyment of cotton pickers.

"When a plantation owner wants his cotton picked in a hurry, he issues a call to all the folk in the neighboring countryside. The pickers make their way by river and road, singing all the way. They sing while they pick cotton, and they work until the whole plantation has been picked. Then follows a feast, which they call a barbeque. An ox is roasted over an open fire, songs are sung round the fire, and the festivities wind up with a dance. Such an evening feast will form the theme of John Payne's broadcast, which will be produced by John Pudney.

John Payne was born in the southern cotton fields of the United States and worked there until he was a young man, when he went to a ranch in California. He came to England with a syncopated orchestra in 1919, and has made frequent and long visits here since then.

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COMMISSIONER PAYNE PRAISED FOR STAND ON BROADCASTING

Commissioner George Henry Payne, whose views often run contrary to those of his colleagues on the FCC and to leaders in the radio industry, was praised by the Washington (D. C.) Evening Star in an editorial following his address last week at Bay Shore, L. I. The editorial stated in part:

"George Henry Payne, Federal Communications Commissioner, is a philosopher. His friends have been familiar with that fact for many years, and his writings prove it. For example, he happens to be one of the few thoughtful men who have bothered to consider the future of broadcasting. 'Developments and inventions are now going on and being made in the radio field,' he said in a recent address to the Bay Shore, Long Island, Rotary Club, 'that will affect the mental life and education, and possibly the material interests, of every person in the country.'

"The question is: How and to what effect? And the Commissioner stated the basic problem in terms of opposition groups. 'A fierce struggle,' he declared, 'is going on for the control of the great resource of the air. Private interests favoring private monopoly are naturally anxious that there be just as little governmental "interference" (regulation) as possible in what they call their "business". Those who believe that we must not repeat the mistakes of the past and allow the wasteful private exploitation of our resources are just as keenly aroused in behalf of the Government taking a strong stand to protect the public interests.'

"But the people in general are 'indifferent' to the outcome of the battle, the Commissioner told his audience. And a fair inference from his words is that he believes that it is in that careless attitude on the part of the plain men and women of the Nation that the real danger lies.

"The Commissioner, obviously, is mindful of the record of the past. He knows that apathy has been fatal to social advantage in other earlier crises resulting from new inventions and new processes. Progress, he realizes, almost invariably is handicapped by greed and by the popular inertia upon which greed fattens and grows strong. But he has done his personal duty. If radio is destined to be an added chain for humanity to wear, he at least will have the satisfaction of having warned against the peril of permitting it to become so without resistance."

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7 MONTHS OF NBC MAIL TOPS 1935 TOTAL

Hot weather and vacations notwithstanding, the radio public wrote 63,850 more letters, according to the National Broadcasting Company, in July, 1936, than July, 1935. Daytime programs attracted 63 per cent of this mail. NBC audience mail for the seven months of 1936 has already passed the full year total for 1935.

Among the twenty-five leading non-sponsored programs were six of a strictly religious nature. Four of these were among the first ten "mail-getters". Also among the leaders were four programs featuring vocal soloists.

The ratio of favorable comment to unfavorable is another interesting feature of the July report. Of the 3,021 correspondents who commented on the type of program, 2,975 said they approved. Only 46 written complaints about programs were registered. And-- of this number--a mere 30 had any constructive suggestion to make about improving the program. Artists fared well with 857 applause letters against 39 letters of criticism. In the entire coast to coast total of mail only 15 complaints about commercial announcements were received.

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NBC STATIONS REACH 100 AS KGBX JOINS

Station KGBX, Springfield, Missouri, will join the National Broadcasting Company networks September 1 as an optional station of the company's Southwestern supplementary group. KGBX is owned by the Springfield Broadcasting Company, which is headed by Lester E. Cox. The station is modernly equipped. It broadcasts on 500-watts power with a frequency of 1230 kilocycles.

Originally located at St. Joseph, Missouri, KGBX is a veteran among the mid-western broadcasting stations. It was moved to Springfield in 1931, and has become noted for its broadcasting of news and current events. Its addition will bring the total of NBC stations throughout the nation to 100.

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