in organ pipes has been very fruitful; but these results will have to be omitted here.

9. *Reversal of Poles of Telephone Changes Sign of Fringe Deflection.*—An earlier detection of this result would have saved me much mystification. Not expecting it, I did not look for it; but it seems that a reversal of the telephone current (so to speak) reverses the fringe deflection, symmetrically. It is merely necessary to add a switch to the telephone circuit to prove this. Moreover for a given position of the switch and in the proper order of frequency, pressure increments pass continuously into pressure decrements (Fig. 7).

To test the case further, I used the motor interruptor, making a survey for frequencies between g' and a'' with the switch reversed and the sealed telephone. The new curve corresponded very fully to the curve, Fig. 7, except that maxima and minima had been exchanged. Thus the apparatus regarded as a dynamometer would, with a proper selection of frequency, give both quantity and sign of the impulsive currents in the telephone.

Since the resonating region R is vented by the pinhole, the positions of equilibrium of the quiet and of the vibrating plate are ineffective. Hence it is necessary to assume that the vibrations of the plate are here not symmetrical; or that, for instance, the impulse corresponding to the break of current at the interruptor is of excessive importance.

A closed region may be filled with an excess of compressed wavefront successions, provided means are at hand for the supply of the extra air needed and the energy dissipated; conversely, the closed region may be filled with an excess of rarified wavefront successions if the outflow of superfluous air is possible. In both cases the vent must be so small as to leave the region virtually closed. A ray of light imprisoned in a chamber closed with perfect mirrors might be considered as analogously circumstanced.

10. *Removal of Pressure Decrements Associated with Pressure Increments.*—Marked pressure decrements occur near the minima at c'' and a'' in case of the prolonged tests in §8. One may, therefore, suspect that (as in §7), the decrements result from an insufficiently tight joint at the telephone plate. The telephone with sealed plate was, therefore, carried through the chromatic series of notes from f' to a''. It is needless to give the data here, because they resembled Figs. 7 and 8 in character, except (as was anticipated) that there were no pressure decrements at the minima. In fact the maxima (below f' at c'', g'' and above a'') came out more sharply than in Figs. 7, 8 and the now positive minima (near g', d'', a'') equally so. It seems as if the ordinary overtones in the key of C were in question.

Replacing the sealed telephone by the usual apparatus with clamped plate, the results of Figs. 7, 8 with marked dilatations at the minima were reproduced at once, except that the maxima (a', c'', a'') were in the key of A, in accordance with the increased volume.

Finally I tested the above telephone with sealed plate again and found that pressure decrements at the minima associated with pressure increments at the maxima (as in Figs. 7, 8) had reappeared. These relations were exchanged on reversing the current. I suspect, therefore, that the potent influence is the mode of vibration (modified by sealing) of the telephone plate itself. About this I shall have something to say in the near future, showing that each inductive impulse is followed by shock waves in the plate, of relatively very high frequency compared with the frequency of induction, just as an anvil rings after each blow of the hammer.

Carl Barus

Brown University,
Providence, R. I.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

DUTY ON SCIENTIFIC APPARATUS FOR EDUCATIONAL INSTITUTIONS

The following resolution regarding duty-free importation of scientific materials and scientific books in the English language into the United States by educational institutions have been passed by the American Association for the Advancement of Science:

WHEREAS, the scientific education of the youth of the United States is among the most fundamental and important functions of the Republic, education being the only means by which the advantages of present civilization may be surely transmitted to coming generations of citizens and by which the future progress of the Republic may be assured; and

WHEREAS, the prosecution of the said scientific education of the youth requires unrestricted employment of the apparatus and materials of science in educational institutions, this being increasingly true for more advanced education; and

WHEREAS, the scientific materials and apparatus to be used in educational institutions ought to be selected, as far as possible, without consideration of their place of origin, since science is world-wide in its scope; and

WHEREAS, any increase in the cost of scientific equipment for education is to be greatly deplored, since the funds available for its purchase by educational institutions are invariably inadequate in comparison with the great needs and possibilities of education; and

WHEREAS, institutions for higher education must still be relied on for the most fundamental and farreaching steps in the advancement of knowledge, through the scientific researches of their faculties and students; and

WHEREAS, both financial and patriotic considerations clearly require that the Republic should aid fundamental scientific research in every possible way, especially avoiding the erection of artificial barriers across the path of the advance of true knowledge; and, finally,

WHEREAS, in consideration of the foregoing clauses, The American Association for the Advancement of Science, with its 12,000 members, almost all of whom are citizens of the United States—representing the fundamental scientific interests of the country from the standpoint of scientific research as well as from that of instruction, and representing especially the institutions for higher education and their staffs—views with very serious concern the proposal to repeal section 573 of the tariff act of October 3, 1913, which allows the duty-free importation of scientific materials by educational institutions; therefore, be it

Resolved, that The American Association for the Advancement of Science respectfully calls the attention of the Congress of the United States to the very great hindrance and burden that would be imposed upon the scientific education and research in the Republic if its educational institutions were to be deprived of the privilege of duty-free importation of scientific apparatus and materials, which they have enjoyed for many years; and be it further

Resolved, that the American Association also respectfully urges the restoration of the corresponding privilege of duty-free importation of single copies of scientific books in the English language by recognized educational institutions and the faculties, such books constituting an important item of both institutional and personal equipment for advanced instruction and research, especially since it is undesirable that scientific publications in languages other than English should be artificially favored in the United States; and be it finally

Resolved, that these resolutions be forwarded to the proper committees of the Congress of the United States, to the National Academy of Sciences, to the National Research Council, and to the secretaries of the scientific societies affiliated with the American Association, that they be published in SCIENCE, official organ of the association, and also that they be sent to each member of the association.

SCIENTIFIC EVENTS

'SCIENCE' AND THE PRINTERS' STRIKE

THE printers of SCIENCE are making special efforts to bring out the journal in spite of the general strike of compositors affecting the offices in which most of our scientific journals are printed. In order to assist them, the present number is reduced somewhat in size and is using mainly matter in type prior to the strike. The present issue gives first place to an important article which under ordinary circumstances would be printed in the department devoted to special research. It may again be noted that the advertisers have been requested to use copy already in type.

The Council of the American Chemical Society voted at their recent Rochester meeting:

That this council expresses to the directors of the society the hope that the Eschenbach Printing Company will be released from any forfeits that may arise under the terms of its contract in connection with the impending strike, due to the insistence upon the 44-hour week, and