$$A'' \cdot \frac{dz_2}{dt} + A' \frac{dz_1}{dt} + k (z_1 + E) = q.$$
 (88)

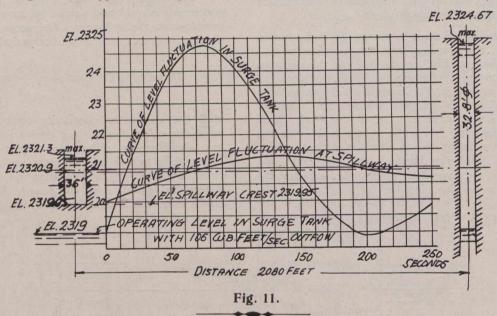
and the second motion equation becomes zero.

and the second motion equation becomes zero.

$$\frac{L''}{g} \frac{d^2 z_2}{dt^2} + r_2 A'' \frac{dz_2}{dt} + a (z_2 - z_1) = 0 \quad (89)$$

From this last equation, z_1 and its derivative may be determined and substituted in equation 30c. For the solution of z2 we get a linear differential equation of the third degree which may readily be integrated. The results of such an investigation are apparent in Fig. 11; we see that at the time of the highest water elevation in the surge tank the height of water flowing over the spillway is directly proportional to the height of the water in the surge tank above the static level, but the quantity of water is greater during the time the level in the surge tank is falling and continues until the level in the surge tank has reached its lowest elevation. The extent of the fluctuations is not only dependent upon the conduit, surge tank and spillway dimensions, but, naturally, also depends upon the area A'. The complete computation of the case would exceed the space available here.

(To be continued.)



FIRST INTERNATIONAL ENGINEERING CONGRESS.

HE first international assemblage of engineers to be known as the International Engineering Congress, and to be held at the Panama-Pacific International Exposition, San Francisco, from September 20-25, 1915, will be presided over by Col. George W. Goethals, who has accepted the office of honorary president. The sessions will be held in the new \$1,000,000 auditorium now being constructed in the civic centre of San Francisco, the main hall of which has a seating capacity of 10,000. Section meetings will be held in the eleven minor halls in the great convention building.

The International Engineering Congress is to be conducted under the auspices of five national associations, viz.: the American Society of Civil Engineers, the American Institute of Mining Engineers, and the Society of Naval Architects and Marine Engineers, assisted by a committee of eighteen of the foremost engineers of California.

The vast scope of the congress is indicated by the fact that it will be divided into eleven groups of sub-congresses, the reports of which it is calculated will fill eleven large volumes. Chief among these branches will be that dealing exhaustively with the problems worked out in the construction of the Panama Canal, and the influence of the canal on world commerce, commercial trade routes and general transportation problems. Colonel Goethals will have charge of the presentation of all canal topics, and his papers and discussion will carry with them the authority and value of official reports. Aside from general engineering topics, the section devoted to the canal will be treated under 22 heads, as follows:

(1) Col. Goethals' general report; (2) Dry Excavation of the Panama Canal, by Col. Goethals; (3) Dredg ing the Canal; (4) Terminal Works, Dry Docks and Wharves of the Canal; (5) Meteorology and Hydrology of the Zone; (8) Designs of Locks, Dams and Regulating Works; (9) Methods of Construction of Same on the Atlantic Side; (10) Same on the Pacific Side; (11) Designs of Locks, Walls and Valves; (12) Spillways; (13) Gates of the Canal; (14) Electrical and Mechanical Installations (2) Fig. (6) stallation; (15) Emergency Dams Above Locks; (16) Municipal Engineering and Domestic Water Supply in the Zone; (17) Reconstruction of the Panama Railroad; (18) Aids to Navigation of the Canal; (19) Geology of the Canal Zone; (20) The Working Force of the Canal; (21) Sanitation in the Zone; (22) Purchase of Supplies for the Canal.

Following Colonel Goethals' personal reports, each of these topics will be treated by the heads of departments or other attachés who were responsible for that part of the canal construction. These addresses and papers will constitute practically the official technical record of that great engineering feat. It will be published, forming the only printed record of its kind, and for this compilation, interesting to the layman no less than to engineers, credit is due to the exposition congress. Programmes for the other ten sections of the congress are in course of preparation.

Subscriptions are being received daily by local of ganizations which will act as hosts for this great body, a large proportion of these being from foreign bodies and foreign engineers. The most noted experts of the world in