

and technical clerks as the work demanded.

An auditing engineer would be responsible to the Board for fair and just expenditure on such as inspection, surveying, equipment, tools. The inspection and analytical staff, the technical librarian and the purchasing agent for Board of Control supplies also coming under the auditing engineer.

The secretary of the Board to deal with correspondence and the direction of affairs through the proper channels, to be responsible through the solicitor for the legal drafting of contracts and specifications, through the accountant for the payment of salaries and accounts, also for advertising of public contracts and other clerical work.

Thus, to use the diagrammatic form of illustration, the proposed Board of Engineering Control might be organized on lines similar to the appendant plan:

(See Diagram sheet.)

The work of the Board could be divided under a number of heads, namely: appraising, approving, estimating, surveying, designing, construction, maintenance. Perhaps the most important would be the work of collecting and tabulating information. There has been published at one time and another a tremendous amount of valuable information for the guidance of engineers and those who are concerned in the development of the country. But owing to the lack of cohesion amongst the various departments, and owing to overlapping, lack of responsibility, lack of system, much of the information has been neglected and practically lost. It would be the duty of the Board to place on record all information available regarding the cost of production and distribution of commodities. A technical librarian would be necessary to classify the information such as reports, blue books, treatises, scientific publications, catalogues, price lists and other literature, and to arrange

it in a system easy of access. The librarian could also be responsible for the filing of all maps, charts, plans and drawings and for the making of blue prints and photographs.

Designing would necessarily occupy an important place in the work of an effective board of control. It has been the practice of state departments upon calling for tenders for some particular contract to allow each tendering firm to prepare and submit their own design with the tender. Such a process would not appear to be the most economic or the most efficient. The system of varying the design according to the schemes of the various tendering firms is the cause of much wasted effort. It being possible to accept only one tender, it generally follows that the unsuccessful designs produce nothing. But each design, whether used or wasted, has to be paid for; if not directly then indirectly by the community. Designs have to be prepared by experts. Therefore included in the bid of each tendering firm is a certain percentage to pay for the services of the expert designers. The percentage is usually sufficient to pay, out of the profits of one successful contract, the expense (and a little more) of all tenders, whether the design be used or wasted.

For instance, supposing tenders are invited for the construction of an elevator at some point on the grain route, or for a ship, or a bridge, or a post office, any public utility. Say five companies are invited to tender and submit their own designs. The average price bid may be one million dollars. Possibly five per cent. (\$50,000) of the price may be included to cover cost of preparing designs. The actual cost of designing may have amounted to only \$5,000; the extra \$45,000 goes to pay for unaccepted designs in other unsuccessful tenders.

To the national exchequer a great saving in contracts could be effected by the Board of Control preparing its own designs.

Each contractor bidding upon a dif-