

(March 14, 1922)

PROTECTION OF TRACK SCALE PARTS FROM CORROSION

(Revised Feb. 10, 1922 from former Communication B 420 ).

Adequate measures for the maintenance of railroad track scales are well justified in view of the considerable item of initial cost and of the economic importance of the service the scale provides for the owner. It is a curious fact that a scale is the only kind of comparatively expensive machinery that many concerns will install under conditions peculiarly favorable to corrosion with scant measures, if any, for protection from that highly destructive agent. Numerous instances of this practice are within the knowledge of those intimate with general weighing conditions.

The protection from corrosion of the pivots, loops, and bearings as well as the levers and structural metal is vital to the accuracy of the scale. Rapid wear is certain to follow if the hardened surfaces of the pivots and bearings are allowed to corrode, and breakage may occur. If not properly protected from corrosive action rapid deterioration of the structural metal will result even to an extent below the designed factor of safety, thus allowing excessive deflections and damage to parts.

Drainage and Cleanliness

The most prolific source of corrosion is foul pit conditions. Water and mud when allowed to collect in the pit as a result of inadequate provisions for drainage impair inspection service, hasten corrosion, and interfere with scale performance generally. Rapid deterioration always follows such conditions. The scale pit should be kept clean and dry at all times.

Waterproof Pit

The best insurance against corrosion is a waterproof pit which, of course, must be provided when the scale is installed. It is perhaps unnecessary to depend upon special preparations or mixtures in the concrete to obtain this. FOR MOST PRACTICAL CONDITIONS, GOOD 1:2:4 CONCRETE, WELL POURED, IS WATERPROOF. A pitch coating on the outside of the walls and floor of the pit will insure a dry interior, provided of course, that the pit walls do not crack.



### Methods of Securing Drainage

The pit floor should be free from holes or pockets where water and mud can accumulate, and should have a slope sufficiently steep to drain water rapidly and completely to a common point for removal, either by gravity drain, siphon, or automatic pump. When pumping is necessary as in cases where the scale is installed with the pit floor below gravity drainage level, water from the pit should be drained into a sump located preferably outside the pit, or, if necessary, inside the neck of the pit, and means provided for automatic removal when the water reaches a certain level.

### PROTECTION OF PIVOTS, LOOPS, AND BEARINGS

#### Cup Grease

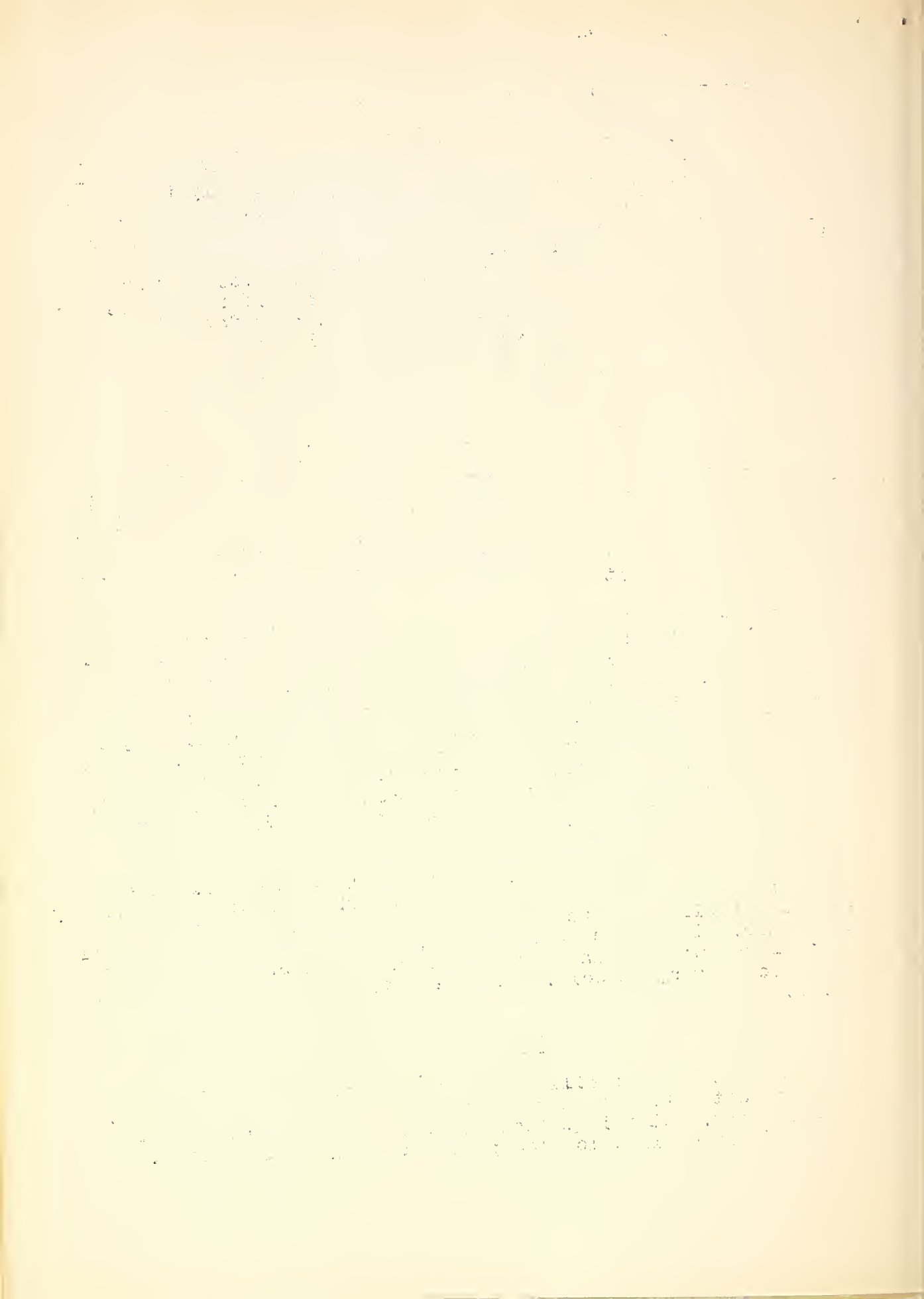
The use of cup grease thoroughly packed around pivots, and bearings, and inside the loops of the main lever system, is highly recommended. Success in its use depends essentially upon the parts being clean and dry when the grease is applied. The grease should be neatly packed around the pivots, and bearings, and the loops should be completely filled so that the grease is flush with the sides.

The use of cup grease is sometimes objected to on the ground that it tends to loosen pivots and bearings which will then have a tendency to slip out of their seats. In such an event this is believed to be due more to minor defects in seating the pivots and bearings or to faulty design of the seats than to loosening action of the oil. The difficulty in most cases can be overcome by coating the seats with red lead and oil, or litharge and glycerine, or similar material before the pivots and bearings are driven home. When this precaution is taken the use of a heavy grease can generally be depended upon to give satisfaction.

Suitable cup greases are on the market which will not melt in ordinary summer temperatures, and which are sufficiently plastic in winter as not to interfere with the performance of the scale. In some cases, however, it may be advisable in cold weather to put a thinner grease in the loops of the transverse extension lever, especially if the action of the beam becomes stiff.

#### Oil

The practice of oiling the pivots and bearings twice a week, or oftener, with a swab or brush, has often been found satisfactory; but this method is practicable only on modern types of scales in which the parts are easily accessible.





Moreover, this method is perhaps more likely than any other to loosen poorly fitting pivots and bearings, a matter which is referred to above.

#### Paint and Shellac

Paint and shellac have been used in some instances in an attempt to prevent corrosion of pivots and bearings. They are generally considered to be inadequate for the reason that the protecting material must necessarily be removed from the sharp edges of the pivots, which of course leaves parts which it is essential to protect, susceptible to corrosion.

#### Special Compounds

Special compounds of oily or other nature have been placed on the market for protecting iron and steel from corrosion. The Bureau has no reliable information as to the efficiency of such compounds when used on track scales. It is believed, however, that their efficiency can hardly be greater than ordinary cup grease when the latter is properly applied.

#### Special Chemical Treatment

Testimony as to the value of various chemical treatments given to steel to prevent corrosion of pivots of track scales is incomplete at this time, and therefore, the Bureau is not in position to make specific recommendations.

### PROTECTION OF LEVERS AND STRUCTURAL PARTS

#### Paint

For the purposes of painting the levers and structural parts a good grade of red lead well mixed in linseed oil is recommended. Three thin coats should be applied to the thoroughly cleansed and dried surfaces from which all rust has been removed. Each coat should be allowed to dry thoroughly before the succeeding coat is applied. Too much emphasis cannot be given to the necessity of having the parts clean and free from rust before the paint is applied.

#### Crude Oil or Car Oil

Good results have been claimed for the practice of coating metal parts under the deck with crude oil or ordinary black car oil applied with a brush or blower at intervals of one year or oftener. In treating a scale that has already suffered considerable corrosion it will be found very difficult to clean all the rust off on account of inaccessibility

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data. The text also mentions that regular audits are necessary to identify any discrepancies or errors in the accounting process.

2. The second section focuses on the classification of expenses. It provides a detailed list of categories, such as salaries, rent, utilities, and travel. Each category is defined with specific criteria to ensure consistency in reporting. The document also notes that certain expenses may be eligible for tax deductions, and it provides guidance on how to properly document these for tax purposes.

3. The third part of the document addresses the issue of budgeting. It explains how to create a realistic budget based on historical data and current market conditions. The text highlights the importance of monitoring actual spending against the budgeted amounts to avoid overspending. It also discusses strategies for adjusting the budget if necessary, such as reallocating funds or cutting non-essential expenses.

4. The fourth section discusses the role of technology in modern accounting. It mentions various software solutions that can automate repetitive tasks, such as data entry and reconciliation. The text also touches on the importance of data security and the need to implement robust cybersecurity measures to protect sensitive financial information. Additionally, it mentions the benefits of cloud-based accounting systems for real-time collaboration and data access.

5. The final part of the document provides a summary of the key points discussed. It reiterates the importance of accuracy, transparency, and regular communication in the accounting process. The text concludes by encouraging the reader to stay updated on the latest trends and regulations in the field of accounting to ensure compliance and optimal performance.

of parts. Loose flakes are brushed off or jarred off with a hammer before the oil is applied. In about a month the scale may again be gone over in a similar manner when it will be found that much of the rust which could not be removed at the original application will have been loosened by the action of the oil. The spots thus uncovered may then be coated with oil.

### VENTILATION

Ventilation when properly used is a valuable aid in keeping the scale pit dry and thus preventing corrosion; however, in some cases it may be detrimental such as when warm or moist air enters a cool, dry pit. This will result in "cold sweating", that is, water will collect through condensation on the cool metal parts. Ventilation is desirable whenever the outside air is cooler or dryer than the air of the pit, as under these conditions there will be a tendency to dry the pit.

#### Forced Ventilation

Experience shows that forced ventilation is unsatisfactory for the reason that it is not automatically stopped when conditions are unfavorable.

#### Flue System

The following flue system which to a great extent automatically provides against circulation during unfavorable weather conditions will be found generally applicable. An opening may be made into the pit at each corner to connect with flues which terminate near the bottom of the pit, and another opening without a downward flue made in the top of the pit and near its center. With such an arrangement air will circulate through the pit, when, and only when, the air in the pit is warmer or more moist than the outside air. In this manner circulation will be set up only when it will dry the pit.

As cold sweating will take place under certain conditions when there is no circulation, the arrangement just proposed will not eliminate the trouble under such conditions but it should reduce the cold sweating to a minimum and in a very material way improve the dryness of the pit.

### CONCLUSION

In most cases corrosion is more destructive to important scale parts than wear. The most prolific source of corrosion is foul pit conditions. KEEP THE PIT CLEAN AND DRY.

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