infrequent that a portion of a train is derailed on these turnouts. This leads to the belief that if the derails were not there, the main track might have been fouled while a train was passing. When unusual moves such as sawbys or set-offs occur, train movements can be more fully protected if derails are used. Further, we know that crews do head into passing tracks and fail to stop clear of the fouling circuits where derails are not in use.

We find that it is more satisfactory to pipe-connect these derails to the main-line switches than to operate them independently because when the derails are pipe-connected, trains can head in or out with less delay.

Derail Sometimes Needed; Recommends Use of Separate Switch Stand

By C. A. Christofferson
Signal Engineer, Northern Pacific, St. Paul, Minn.

At the ends of some passing tracks it might be necessary to install a derail, whether it is desirable or not. If it is necessary and desirable to pipe-connect it, an independent stand, bolt-locked with the switch should be used, and I believe that a switch stand placed next to the derail is preferable, but in either case there should be a switch circuit controller placed on the derail.

The experience we have had on the Northern Pacific with the derail which is pipe-connected to the switch stand leads me to believe that in each case an independent stand should be used, as described above. Our operating officers are very much opposed to any pipe-connected derails and prefer an old switch stand placed right in front of the derail, and I believe that this is all that is needed.

Derails an Unnecessary Expense

By W. J. Eck
Assistant to Vice-President, Southern, Washington, D. C.

In our opinion, these derails are neither necessary nor desirable. We have not used derails in passing sidings for many years and have found that our practice is safe. Derails at such points are an unnecessary installation and maintenance expense, and do not add to the safety of operation. The only places where we consider derails necessary are in house tracks or storage tracks where cars are left unattended. At such places cars may foul the main track either by being blown out or by being moved by outsiders. At such places derails are desirable, but in passing sidings such conditions do not prevail and derails are unnecessary.

W. M. Post, assistant chief signal engineer of the Pennsylvania, replies, "It is my opinion that derails are not necessary at the ends of passing sidings in automatic signal territory, excepting where such sidings are used for the storage of cars. Most signal engineers believe that derails are not necessary on main track at interlocked grade crossings, or junction points, because the engineman can be depended upon to stop his train at the signal. It would seem logical to assume that the engineman can stop at the end of a passing siding, especially as he is running at slow speed on the siding."

Proceed Aspects for Isolated Home Signals

"Should a different Proceed aspect be provided for a home signal at an isolated (not tied in with any other signals) interlocking plant, such as an automatic crossing, than for signals in automatic signal territory, or in larger interlocking plants, where there is a signal in advance of (i. e., in the territory governed by) the signal in question?"

Believes Use of Different Aspects Advisable

By C. H. Tillett
Signal Engineer, Canadian National, Toronto, Ont.

In my estimation, the home signal at an automatically protected crossing should be different from the home signal at an interlocking plant. Under our rules, an engineman receiving a Stop indication at a home signal of an interlocking plant remains there until he receives a caution card, Form D, or other communication, sometimes in the form of a telephone conversation from the signalman that he is to proceed.

The action of the train crew at an automatically protected crossing is to proceed to the crossing and, after making sure that no train is on the opposing route, to flag their train across. This action is very similar to the means of getting by an absolute signal in A.P.B. territory. When such a signal is at Stop and communication cannot be had with the dispatcher, they flag themselves through, and for that reason the same indication in our rule book has been given to the absolute signal in A.P.B. territory that is given to the home signal at an automatically protected crossing. This is differentiating between an automatically protected crossing and one protected by a manually controlled signal.

Operating Rules Should Govern

By F. B. Wiegand
Signal Engineer, New York Central, Lines West, Cleveland, Ohio

A different Proceed aspect should not be provided for a home signal at an isolated interlocking plant than for home signals at other points. In making this statement, I have in mind aspects as between interlocking plants, keeping in mind that the giving of indications by such signals is also involved.

Code Rule 281 makes no distinction in the giving of indications. In this rule the Proceed indication is given by the signal arm in the vertical position in the daytime, and by a green light at night. The day and night aspects for color-light signals are the same as the night aspect of semaphore signals, i. e., green, and those for position-light signals are the same as the day aspect of semaphore signals, i. e., vertical.

The isolated interlocking in this day and age would undoubtedly be in manual block territory, and the question is brought about by a condition affecting a train movement through a block under permissive indication.

A train entering a block permissively must proceed through the block prepared to stop short of a train ahead. The train entered the block under a yellow light, or the equivalent thereof, and when it arrived at the isolated interlocking it received a green indication. The first indication gave the train permission to proceed permissively and the second indication gave the train permission

to proceed without reservation. The permissive indication applied to the entire block; the proceed indication to the limits of an interlocking plant. Code Rule 305 states: "Block signals govern the use of the blocks" and Code Rule 605 states: "Interlocking signals govern the use of routes of an interlocking plant."

It may be stated that in automatic territory interlocking home signals are used also as block signals and the question arises, which rule governs? The answer is, interlocking rules govern movements through the interlocking and automatic block system rules in the territory beyond. A rule to protect the situation should read: "Where an interlocking is in use in automatic block territory, interlocking rules govern movements through the interlocking. Interlocking home signals will be used as automatic block signals." Enginemen know when they are operating in manual block, and in automatic block, territory and are governed accordingly.

Taking the question as a whole, I am inclined to believe it is the signal indication rather than the signal aspect that the questioner has in mind. The aspect is the picture of the signal as it appears to an engineman, which enables him to distinguish its kind, whether interlocking, automatic block or manual block. The indication is the information given by the signal, by which train movements are governed, such as Stop; Proceed, prepared to stop at next signal; Proceed, etc.

With the two involved points in mind, my conclusions are:

1. The aspects of signals at interlockings, regardless of their location, should be the same.

2. Each class of signal should have a different aspect, the class being designated by some distinguishing feature. See Code Rule 289 and 291.

3. The Proceed indication of signals at interlockings, regardless of location, should be the same, i. e., green or the equivalent.

No Special Proceed Indication

By C. H. Morrison
Signal Engineer, New York, New Haven & Hartford, New Haven, Conn.

We have no special Proceed indication for home signals at isolated interlocking plants such as automatic crossings, etc., and it is my belief that the A. R. A. standard signal aspect is sufficient to take care of all the Proceed indications of signals.

At automatic grade crossings we use a vertical arm, or green light, which indicates to an engineman that he may run his train at the highest speed permissible at that point. If it were desired that they reduce speed, we would use the semaphore arm in the 45-deg. position, with a yellow light, and, according to the New Haven operating rules, the indication would be "Reduce speed at once and proceed at restricted speed."

If the automatic interlocking is located at an isolated point and the blocking of trains is handled by a telegraph block system, the block system would work through the grade-crossing point. Therefore, the grade crossing signals would only govern the movement of the train over the crossing and if the train were being operated under a clear block, it could continue at the highest speed permissible between the two block stations. If the speed were restricted over the grade-crossing frogs, the train would proceed at restricted speed until the crossing frogs were cleared and then could resume regular speed.

We have, on the New Haven system, only two automatic interlockings at grade crossings and we do not see the necessity for a special Proceed signal indication. It may be that on roads having numerous automatic interlockings a special Proceed signal indication would be advisable.

No Distinction on New York Central

By W. H. Elliott
Signal Engineer, New York Central, Albany, N. Y.

It is the practice of this road to provide the same Proceed aspect and indication for all locations, where a restriction on the movement of a train is not required, regardless of whether or not there is a signal in advance of the signal in question. An Approach indication requiring the train to approach another signal at a speed less than normal is used only when such a signal is located a reasonable distance in advance.

Where railroad grade-crossing signals are installed in manual block territory without signals immediately in advance, the home signals give the regular Proceed indication. Where automatic switch signals are located in manual block territory governing the approach to switches and a home manual block signal it is our present practice for the switch signal to be three-position, giving Proceed, Approach and Stop indications.

Sequence of Levers

In interlocking machines having no mechanical locking, should the circuits be designed so that the operator must throw the levers in a specified sequence in order to set up a route? What are the arguments pro and con?

Any Sequence

By C. F. Stoltz
Signal Engineer, Big Four, Cincinnati, Ohio

The purpose of an interlocking machine having no mechanical locking is to facilitate the movement of the levers. It is the necessity of operating in sequence and waiting on indications that slows up the operation of the mechanically locked machine. This is what we are trying to avoid.

In the simplified type of interlocking where the protection is provided electrically rather than mechanically, it should make no difference whether certain switch controls are operated prior to other controls. A Proceed signal indication will not be displayed until the route is completed, and anything that may be done to facilitate a change in route, such as permitting the levers to be manipulated in any sequence, will, of course, facilitate train movements through the plant. At Linndale, Ohio, where we have one of these plants in operation, the circuits are designed to require the movement of a switch-controlling lever when the detector circuit is unoccupied, in order to move the switch. The lever is free to be moved at any time, but with a train on the approach circuit approaching a Proceed signal or occupying a detector circuit, the movement of the switch will not follow the movement of the lever. This was done because, in electrified territory, single-rail track circuits are used, and it was principally a precaution against a possible momentary loss of shunt. This feature may be omitted at many points, particularly at outlying points where the switches are more remotely controlled, and a close meet may eliminate the necessity of stopping a train.