

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2827
THE CHICAGO & EASTERN ILLINOIS RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR DEWEY, IND., ON
SEPTEMBER 14, 1944

SUMMARY

Railroad: Chicago & Eastern Illinois

Date: September 14, 1944

Location: Dewey, Ind.

Kind of accident: Head-end collision

Trains involved: Express-mail : Passenger

Train numbers: 90 : First 95

Engine numbers: 1011 : 1019

Consist: 15 cars : 14 cars

Estimated speed: Standing : 35 m. p. h.

Operation: Timetable, train orders and
automatic block-signal system

Track: Single; tangent; 0.21 percent
ascending grade southward

Weather: Dense fog

Time: 2:20 a. m.

Casualties: 29 killed; 42 injured

Findings: That accident was caused by failure
to obey meet order and to control
speed of train in conformity with
automatic block-signal indications;
that Rule 509 as modified by time-
table special instructions practi-
cally nullified protection intended
to be provided by block system for
opposing first-class trains within
yard limits; and that block-signal
system in use was not adequate for
authorized speeds

Recommendation: That the Chicago & Eastern Illinois
Railroad Company install an automatic
train-stop, train-control or cab-signal
system on line on which this accident
occurred

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2827

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

THE CHICAGO & EASTERN ILLINOIS RAILROAD COMPANY

November 2, 1944.

Accident at Dewey, Ind., on September 14, 1944, found to be caused by failure to obey meet order and to control speed of train in conformity with automatic block-signal indications. Protection intended to be provided by block system for opposing first-class trains within yard limits found to be practically nullified by Rule 509 as modified. Block system in use on this line found to be not adequate for authorized speeds.

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REPORT OF THE COMMISSION

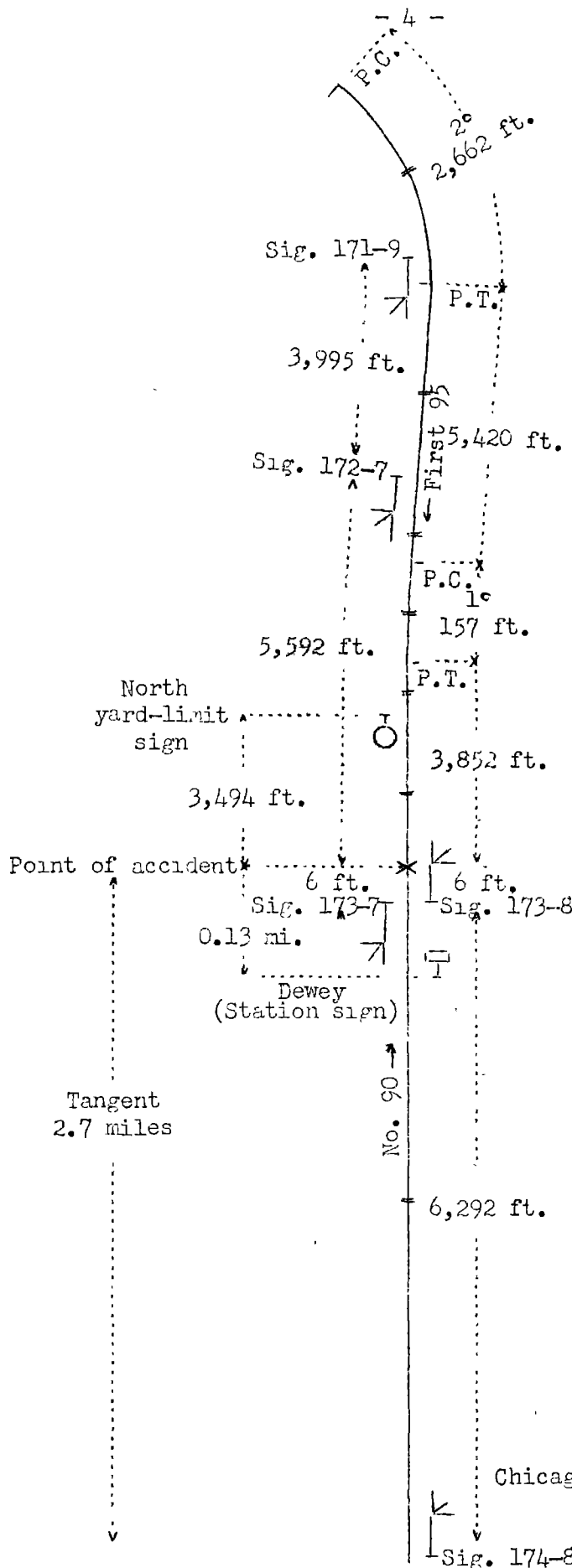
PATTERSON, Chairman:

On September 14, 1944, there was a head-end collision between an express-mail train and a passenger train on the Chicago & Eastern Illinois Railroad near Dewey, Ind., which resulted in the death of 26 passengers, 1 Pullman employee and 2 train-service employees, and the injury of 32 passengers, 4 railway-mail clerks, 1 Pullman employee and 5 train-service employees. This accident was investigated in conjunction with a representative of the Indiana Public Service Commission.

¹Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Chairman Patterson for consideration and disposition.

↑ To Brewer

↓ To Evansville



o	Chicago, Ill.	16.90 mi.
o	Dolton Jct.	106.10 mi.
o	North Yard	0.20 mi.
o	Danville	0.20 mi.
o	Cory	3.10 mi.
o	Brewer, Ill.	35.70 mi.
o	Jackson, Ind.	0.70 mi.
o	Clinton	4.40 mi.
o	Atherton	4.60 mi.
o	Otter Creek Jct.	1.77 mi.
x	Point of accident	0.13 mi.
o	Dewey	2.70 mi.
o	Haley	1.00 mi.
o	Terre Haute	109.30 mi.
o	Evansville, Ind.	

Inv-2827
Chicago & Eastern Illinois Railroad
Dewey, Ind.
September 14, 1944

Location of Accident and Method of Operation

This accident occurred on that part of the railroad designated as the Evansville District and extending northward from Evansville, Ind., to Brewer, Ill., 160.8 miles. In the vicinity of the point of accident this was a single-track line over which trains were operated by timetable, train orders and an automatic block-signal system. The accident occurred on the main track 113.63 miles north of Evansville, at a point 0.13 mile north of the station at Dewey. From the south the track was tangent 2.7 miles to the point of accident. From the north there were, in succession, a 2° curve to the right 2,662 feet, a tangent 5,420 feet, a 1° curve to the left 157 feet and a tangent 3,852 feet to the point of accident. The grade for south-bound trains varied from 0.04 to 0.54 percent descending 1.76 miles, then it was 0.21 percent ascending 2,087 feet to the point of accident.

The automatic block-signal system was arranged on the overlap principle. Signals 174-8 and 173-8, governing north-bound movements, were located, respectively, 6,298 feet and 6 feet south of the point of accident. Signals 171-9, 172-7 and 173-7, governing south-bound movements, were located, respectively, 9,587 feet and 5,592 feet north, and 6 feet south of the point of accident. These signals were of the upper-quadrant, semaphore type. Signal 174-8 was continuously lighted, and signals 173-8, 171-9, 172-7 and 173-7 were approach lighted. The involved night aspects and corresponding indications and names of these signals were as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
174-8) 171-9)	Green	Proceed	Clear-signal
173-8) 173-7)	Red	Stop	Stop-signal
172-7	Yellow	Proceed not to exceed one-half the maximum speed authorized at point involved, not exceeding 30 miles per hour, prepared to stop at next signal.	Approach-signal

The controlling track circuits were so arranged that when a north-bound train passed signal 174-8, signal 172-7 would display approach and signal 173-7 would display stop, and when a south-bound train passed signal 171-9, signal 174-8 would display approach and signal 173-8 would display stop.

Operating rules read in part as follows:

DEFINITIONS

* * *

Fixed Signal--A signal of fixed location indicating a condition affecting the movement of a train or engine.

* * *

Caution--Moving at such speed that stop can be made within range of vision.

* * *

ENGINE OR MOTOR WHISTLE SIGNALS.

14. Note.--The signals prescribed are illustrated by "o" for snort sounds; "___" for longer sounds. * * *

SOUND.

INDICATION.

* * *

(p) ___ o ___	* * * approaching stations where a train is to be met * * *
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* * *

Should the enginemen fail to correctly sound 14 (p) approaching a meeting point, trainmen must stop the train.

27 b. When conditions obscure a clear view of fixed signals, enginemen must approach them with caution.

34. All members of train and engine crews must, when practicable, call and repeat to each other the indication of fixed signals affecting the movement of their train. * * *

71. A train is superior to another train by right, class or direction.

Right is conferred by train order; class and direction by time table.

Right is superior to class or direction.

* * *

72. * * *

Northward trains are superior to southward trains of the same class on single track * * *.

88. * * * When meeting by train order the inferior train must take the siding unless otherwise provided.

* * *

90a. When meeting by train order * * * unless otherwise provided, the superior train must wait clear of the switch to be used by the inferior train in taking the siding, * * *.

93. * * * Within yard limits the main track may be used, clearing first class trains * * * Second class, third class and extra trains, road engines, yard engines and motors must move within yard limits under such control as will prevent accident, and must not exceed five miles per hour unless the main track is seen and known to be clear and switches right, and such movements will be made without clearing or protecting against each other, * * *

202. Each train order must be given in the same words and figures to all employes or trains addressed or affected thereby.

208b. Clearance card * * * will be issued to the conductor and enginemen of each train receiving train orders * * *; this form must be carefully filled out to show the numbers of all train orders * * * for delivery to the train addressed * * *. Conductors and enginemen must carefully check this form and know that they have all the train orders * * *, the numbers of which are shown thereon. * * *

* * *

211a. Conductors must show all train orders * * * to their brakemen and flagman, and if practicable, to their baggagemen.

Enginemen must show all train orders * * * to firemen * * *.

All such employes must read these orders * * * aloud to such conductor or enginemen and bear them in mind.

221. Where a fixed signal is used at a train order office it shall indicate stop at all times when there is an operator on duty, except:

* * *

(c) As provided in this rule for delivery of "19" order.

* * *

When the fixed signal is used as a train order signal only, the caution or diagonal position indicates "19" orders, and the "stop" or horizontal position indicates "31" orders * * *.

* * *

FORMS OF TRAIN ORDERS

* * *

Form A.--Fixing Meeting Points for Opposing Trains.

(1) No. 1 meet No. 2 at B.

* * *

* * *

Trains receiving these orders will run with respect to each other to the designated points and there meet in the manner prescribed by the rules.

Form C.--Giving Right over Opposing Train * * *

(1) No. 1 has right over No. 2 G to X.

If the second named train reaches the station last named before the other train is due, it may proceed, clearing the schedule of the opposing train * * *.

* * *

Form L.--Annulling an Order.

Order No. 10 is annulled.

If an order which is to be annulled has not been delivered to a train, the annulling order will be addressed to the operator, who will destroy all copies of the order annulled but his own, * * *.

* * *

Form P.--Superseding an Order or Part of an Order.

This order will be given by adding to prescribed forms the words "instead of _____".

(1) No. 1 meet No. 2 at D instead of C.

* * *

509. When a train is stopped by a block signal on single track, it may expect to find train in block, open switch, broken rail or other obstruction; and a flagman will start ahead at once. If signal does not change to proceed, the train will wait five minutes, and then follow flagman at a sufficient distance to insure protection until flagman can see that the next block signal in advance displays a proceed indication, when the flagman may be picked up and train proceed to that signal at a speed not exceeding six miles per hour; * * *.

Time-table special instructions read in part as follows:

6--BLOCK INFORMATION:

* * *

b--Under Rule 509--Within Yard Limits on single track, a first class train stopped by an automatic signal may proceed with caution to the next signal the same as rule provides for other trains within yard limits.

Signals 173-7, 173-8 and 174-8, were located within yard limits.

The maximum authorized speed for the trains involved was 80 miles per hour.

Description of Accident

No. 90, a north-bound first-class express-mail train, consisted of engine 1011, three express-refrigerator cars, one express car, five mail cars, two express cars, three express-refrigerator cars and one passenger-baggage car, in the order named. The first to the third cars, inclusive, and the tenth to the fourteenth cars, inclusive, were of steel-underframe construction, and the remainder were of all-steel construction. At Terre Haute, 3.7 miles south of Dewey, the crew of this train received a clearance form and copies of three train orders. The orders read as follows:

3 Form 31

1st and 2nd 95 engs 1019 and 1012
have right over No 90 eng 1011
Clinton to Terre Haute.

11 Form 19

1st 95 eng 1019 meet No 90 eng
1011 at Dewey 1st 95 take siding
2nd 95 eng 1012 gets this order
and wait at Clinton until 240 AM

13 Form 19

1st 95 eng 1019 take siding and
meet No 90 eng 1011 at Atherton
instead of Dewey.

Clinton and Atherton were, respectively, 10.9 miles and 6.5 miles north of Dewey. No. 90 passed Haley, 2.7 miles south of Dewey and the last open office, at 2:14 a. m., 1 hour 1 minute late, passed signal 174-8, which displayed proceed, passed Dewey and stopped about 2:18 a. m. at signal 173-8, which displayed stop. About 2 minutes later, after this train had moved northward and had stopped with the front of the engine about 6 feet north of signal 173-8, it was struck by First 95.

First 95, a south-bound first-class passenger train, consisted of engine 1019, one baggage car, one baggage-mail car, one Pullman tourist car, two Pullman sleeping cars, five coaches and four Pullman sleeping cars, in the order named. The eighth car was of steel-underframe construction, and the remainder were of all-steel construction. At Cory, a station on the Danville District 50.4 miles north of Dewey, the crew of this train received a clearance form and copies of three train orders, of which one was train order No. 3, Form 19. At Clinton, the crew received a clearance form and copies of three train orders, Form 19, of which one was train order No. 13 reading as follows:

First 95 eng 1019 take siding and
meet No 90 eng 1011 at Atherton.

In order to reduce the number of orders to be delivered to First 95 at Clinton, the dispatcher issued to the operator at Clinton order No. 14, which annulled order No. 11, and instructed the operator to omit the words "instead of Dewey" from order No. 13. Order No. 11 established Dewey as the meeting point between First 95 and No. 90. First 95 passed Clinton at 2:06 a. m., 37 minutes late, passed Atherton, where it should have taken siding to meet No. 90, passed Otter Creek Jct., 1.9 miles north of Dewey and the last open office, at 2:18 a. m., 37 minutes late, passed signal 171-9, which displayed proceed, passed signal 172-7, which displayed approach, and while moving at an estimated speed of about 35 miles per hour it collided with No. 90 about 6 feet north of signal 173-7, which displayed stop.

The force of the impact moved No. 90 southward about 68 feet. The engine of each train, the first car of No. 90 and the first four cars of First 95 were derailed and badly damaged. The second, third, fourth and eighth cars of No. 90 and the fifth and sixth cars of First 95 were considerably damaged. The second car of First 95 telescoped the third car, and the third car was sheared practically its entire length diagonally from the floor on the right side to the juncture of the roof and side sheets on the left side. The passengers killed were occupants of the third car.

There was a dense fog at the time of the accident, which occurred about 2:20 a. m.

The engineer and the fireman of First 95 were killed. The conductor, the front brakeman and the baggageman of First 95, and the engineer and the front brakeman of No. 90 were injured.

Discussion

The investigation disclosed that the crews of both trains held copies of several train orders, one of which gave First 95, a south-bound first-class train, right over No. 90, a north-bound first-class train, Clinton to Terre Haute, and another order, subsequently issued, which established Atherton as the meeting point between these trains and included the instruction

that First 95 would take siding at the meeting point.

First 95 passed Atherton, where it was required to enter the siding and to remain clear of the main track until No. 90 had been met, passed signal 172-7, which displayed approach, and was moving at a speed of about 35 miles per hour when it collided with No. 90 about 6 miles south of Atherton and about 6 feet north of signal 173-7, which displayed stop. The approach indication displayed by signal 172-7 required the speed of First 95 to be not in excess of 30 miles per hour and to be so controlled that the train could be stopped short of signal 173-7, and the stop indication displayed by signal 173-7 required that train to be stopped short of it.

When No. 90 passed signal 174-8, this signal was displaying proceed. Soon afterward the enginemen observed signal 173-8 a considerable distance ahead of their train, displaying approach, and the engineer immediately made a service brake-pipe reduction, then the aspect of this signal changed to stop. No. 90 stopped at signal 173-8, then proceeded. This signal was within yard limits, and the rules governing operation in this territory permitted a train, after it had stopped short of a block signal displaying stop, to proceed immediately under control as specified in the modified provisions of Rule 509. When the engine reached a point a few feet north of signal 173-8 the engineer saw the headlight of the opposing train a few hundred feet distant, and immediately stopped his train. The front end of the engine was about 6 feet north of signal 173-8 when the collision occurred.

About 14 minutes before the accident occurred, a member of the engine crew and the front brakeman of First 95 received copies of a clearance form and three train orders, including the meet order involved, from a train-order delivery-device as their train passed Clinton, 4.4 miles north of Atherton. The front brakeman was in the sixth car. He read the orders and understood that his train was required to enter the siding at Atherton to meet No. 90. He made no attempt to deliver the orders to the conductor or to the other members of the train crew, but proceeded toward the front end of the train so as to be in position to open the siding switch with the least delay when the train stopped. Because of darkness and fog, he was not aware that the train had passed the meeting point until the brakes were applied in emergency about 30 seconds prior to the collision. The conductor and the flagman were in the rear car when First 95 passed Clinton. They knew that copies of train orders had been received by other members of the crew, but they made no attempt to ascertain the requirements of the orders. The assistant conductor, assigned to the duty of collecting tickets, was proceeding toward the front end of the train when the collision occurred. The brakes had been tested and had functioned properly. There was no condition found that would prevent the proper application of the train brakes. The operator at Clinton said he saw a member of the crew on the engine

of First 95 remove the clearance form and the train orders, which were tied together by a cord, from the train-order delivery-device. The enginemen's copies of train orders received at Clinton had not been found up to the time this investigation was completed. The train-order signal was displayed for delivery of the train orders, and members of the train crew observed it to be so displayed. Had the enginemen failed to receive a clearance with or without orders, they were required to take action immediately to stop the train. Why the enginemen of First 95 failed to comply with the meet order could not be determined, as the fireman was instantly killed and the engineer lived only a few hours after the accident.

No member of the train crew of First 95 observed that any action was taken to reduce the speed until about 30 seconds before the collision occurred, when the brakes were applied in emergency. Although members of the train crew were not paying particular attention to the speed of the train, they estimated it as about 55 miles per hour at the time the brakes were applied and about 35 miles per hour at the time of the collision. No. 90 entered the block after First 95 passed signal 172-7, but was brought to a stop with the front end of the engine 6 feet beyond signal 173-8, which was opposite signal 173-7, when the opposing train was observed approaching. If the speed of First 95 had been reduced to not exceeding 30 miles per hour as required, and so controlled that the train could be stopped short of signal 173-7, which displayed stop, the accident would either have been prevented or its disastrous consequences would have been averted.

The investigation disclosed that signal 172-7, which displayed approach for First 95, was equipped with an oil signal lamp which had been converted to electric lighting. The intensity of the rays of this light was much less than that of signal lamps having reflector backs used on other signals in this territory. First 95 encountered dense fog between Clinton and the point of accident. Since no member of the train crew observed any action in the vicinity of signal 172-7 to reduce speed in compliance with the approach indication, it is possible that the enginemen did not see the indication because of the dense fog and the relatively low intensity of the signal light.

This carrier had an automatic train-stop system in operation on the Danville District between Dolton Jct., near Chicago, and North Yard, near Danville, Ill., 106.1 miles, and on the Evansville District between Brewer, Ill., and Jackson, Ind., 35.7 miles. The accident occurred 11.47 miles south of the south end of the latter-mentioned territory. The engines of No. 90 and First 95 were equipped with automatic train-stop devices, but there were no roadway elements of this system installed on the track in the vicinity of the point of accident. If the automatic train-stop system had been in operation in the territory involved, the train-stop device of the engine of First 95

would have been actuated approximately 5,600 feet north of the point of accident, and this accident probably would have been averted.

Section 207 of the Commission's order of April 13, 1939, prescribing rules, standards, and instructions for automatic block-signal systems, requires that, on track signaled for movements in both directions, signals shall be so arranged and controlled that proper restrictive indications will be provided to protect both following and opposing movements. This contemplates that a train will pass at least one signal displaying approach before it reaches a signal displaying stop. The controlling track circuits of the automatic block-signal system on this line were so arranged that signals 174-8 and 173-8, governing the movement of No. 90, displayed, respectively, proceed and stop. No. 90 passed signal 174-8 before the opposing train entered the limits of its control circuit and therefore received no warning of the approach of First 95 until the engine-men saw, through the intermittent fog, first the approach indication and then the stop indication displayed by signal 173-8, in time to stop short of that signal. However, if the indication had not been seen until the engine was in the vicinity of signal 173-8, No. 90 would have passed the signal without stopping and would have collided with First 95 a considerable distance beyond the signal, and the results of the accident might have been more disastrous.

Rule 509 as modified, which permitted No. 90 to enter the occupied block immediately after it stopped at signal 173-8 and to proceed through the block under control, practically nullified the protection intended to be provided by the block system for the two first-class trains involved, and adequate protection was not otherwise provided. The approach indication displayed by signal 172-7 for First 95 was proper at the time this train passed it, as No. 90 had not yet entered the block extending between signals 173-8 and 172-7. Under the block-signal rules this indication did not signify the possibility that First 95 would meet an opposing train within the block, but when No. 90 entered the block each train was authorized to proceed through the block, which was then occupied by an opposing train, No. 90 under control as specified in the modified rule and First 95 at not exceeding 30 miles per hour prepared to stop at signal 173-7. This condition should be corrected immediately, although under the circumstances in this case if No. 90 had been required to stay south of signal 173-8, a collision would nevertheless have occurred, as First 95 was moving at such speed that it would have passed the stop signal a considerable distance if No. 90 had not obstructed the track.

This investigation disclosed that the signals involved did not provide an adequate margin of safety in stopping distance for trains operated at maximum authorized speed. Pending such

modifications of the signal system as may be required to provide adequate protection for trains being operated at presently authorized maximum speeds, the carrier should at once reduce the maximum authorized speeds to the limits for which the existing signal installation will provide adequate stopping distances.

Findings

It is found that this accident was caused by failure to obey a meet order and to control the speed of a train in conformity with automatic block-signal indications.

It is found that Rule 509 as modified by time-table special instructions practically nullified the protection intended to be provided by the block system for opposing first-class trains within yard limits.

It is found that the block-signal system in use on this line was not adequate for authorized speeds.

Recommendation

It is recommended that the Chicago & Eastern Illinois Railroad Company install an automatic train-stop, train-control or cab-signal system on the line on which this accident occurred.

Dated at Washington, D. C., this second
day of November, 1944.

By the Commission, Chairman Patterson.

(SEAL)

W. P. BARTEL,
Secretary.