INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY COVERING THE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CANADIAN PACIFIC RAILWAY, NEAR ONAWA, ME, DECEMBER 20, 1919

JANUARY 17, 1920

TO THE COMMISSION

On December 20, 1919, there was head-end collision between a passenger train and a freight train on the Canadian Pacific Railway near Onawa, Me, which resulted in the death of 19 passengers and 4 employees and injury of 59 passengers and 9 employees

The investigation of this accident was participated in by a representative of the Public Utilities Commission of the State of Maine, and as a result of this investigation I respectfully submit the following report

The Moosehead subdivision of the Brownville division of the Canadian Pacific Railway, on which this accident occurred, is a single-track line extending from Brownville Junction, Me, to Megantic, Province of Quebec, a distance of 117 miles Train movements over this subdivision are governed by time-table and train orders, except that between Brownville Junction and Barnard, 8 5 miles, and between Boundary and Megantic, 15 2 miles, a permissive staff block system is in effect Between Barnard and Boundary, following freight trains are spaced 10 minutes apart at open telegraph offices, and following passenger trains are blocked by means of a telegraph block system, under which any train following a passenger train must wait until the passenger train is reported at a succeeding station, or may follow in 20 minutes if the next succeeding station, or the station from which it is to follow, is not a telegraph station Train orders are transmitted by telephone

The point of accident is located about 2 3 miles west of Onawa, which station is located 17 7 miles west of Brownville Junction Beginning at a point about 1,500 feet east of the point of accident and proceeding westward there is a 1-degree curve to the right, 1,130 feet in length, followed by a tangent 270 feet in length, and then a 4-degree 8-minute curve to the left, 1,135 feet in length, the accident occurring on this last-mentioned curve about 100 feet from its eastern end At this point there is a mountain on the inside of the curve and a drop of about 15 feet to a small lake on the outside of the curve The range of vision of an engineman approaching the point of acci-

dent on an eastbound train and that of a fireman approaching on a westbound train is limited to about 750 feet, while an engineman approaching on a westbound train can see little farther than the front of his engine Illustrations Nos 1 and 2, both of which are views approaching the point of accident from the east show how the vision of engine crews is obscured For more than a mile on each side of the point of accident the grade is descending for eastbound trains, varying from 1 2 per cent to 0 33 per cent At the point of accident it is 0 9 per cent The accident occurred in the morning shortly after daylight, and the weather at the time was clear

Westbound passenger train third No 39, in charge of Conductor Dillon and Engineman Wilson, consisted of engine 783, 1 box bag-

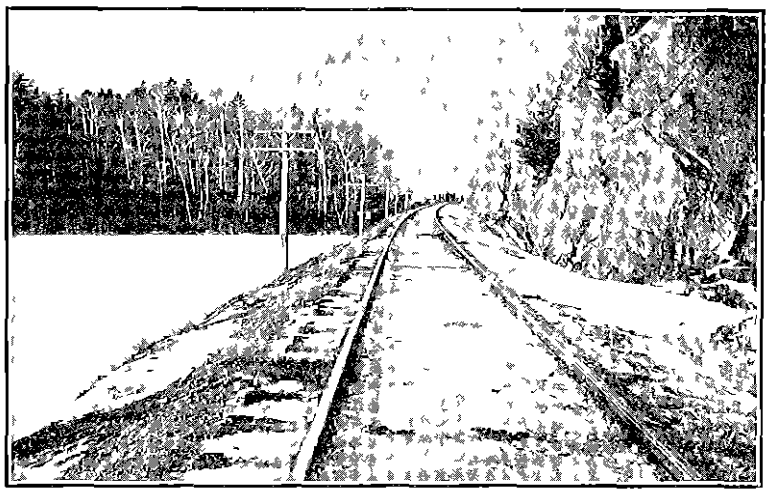

FIG 1 —View approaching point of collision from the east

gage car, 1 coach, 2 colonist cars, 2 tourist cars, 1 colonist car, 1 café car, 1 tourist car, and 2 cabooses, in the order named This train was carrying steerage passengers from the steamship *Empress of France* from St John, New Brunswick, to Montreal, Province of Quebec, and before leaving Brownville Junction, its initial station on the Moosehead subdivision, the crew received several train orders, among which were Nos 20, 28, and 38, all on Form 31 These orders read as follows

Train order No 20—First No 39, eng 818, late, second No 39, eng 852, on block, third No 39, eng unknown, run four 4 hours and twenty 20 mins late, Barnard to Boundary

Train order No 28—Order No 20 is annulled First No 39, eng 818, late, second No 39, eng 852 on block, third No 39, eng unknown, run five 5 hours late, Barnard to Boundary

Train order No 38—Engine 783 display signals and run as third No 39 Brownville to Megantic

The train left Brownville Junction at 6 25 a m, 5 hours and 5 minutes late, passed Barnard at 6 51 a m, 5 hours and 9 minutes late, passed Onawa, the last open telegraph office, at 7 09 a m, 5 hours and 10 minutes late, and at about 7 14 a m, while traveling at a speed estimated to have been between 25 and 30 miles an hour, collided with eastbound freight train first No 78

Eastbound freight train first No 78 was in charge of Conductor Manuel and Engineman Bagley and consisted of engine 2516, 30 loaded cars, 2 empty cars, and a caboose It left Megantic at 6 p m, 30 minutes late, and at Holeb, 30 8 miles east, 6 loaded cars were set out At Moosehead, a nontelegraph station 42 miles east of Holeb, this train met trains first and second No 39, which were

FIG 2.—View from east showing wreckage after it had been cleared from track

approximately 1 hour and 20 minutes and 2 hours and 8 minutes late, respectively, and also met westbound freight train extra 3470, which delivered to the crew of train first No 78 a copy of train order No 28, previously quoted The train arrived at Greenville, 10 8 miles east of Moosehead, at 6 30 a m, and at this point received another copy of train order No 28 and also a copy of train order No 20 The train departed from Greenville at 6 40 a m, the crew intending at that time to meet train third No 39 at Morkill, a station 6 9 miles farther east Train first No 78 arrived at Morkill at 6 57 a m, pulled into the siding, and while doing so the operator handed one copy of train order No 47 on to the engine and another copy on to the caboose Train order No 47 read as follows

Train order No 47.—Third No 39, eng 783, late Fourth No 39, eng unknown, run eight 8 hours late, Barnard to Megantic

The train then left Morkill at 6 59 a m, passed Bodfish, a nontelegraph siding 5 3 miles east of Morkill, and while running at a speed

estimated to have been between 20 and 25 miles an hour collided with train third No 39

The force of the collision interlocked the engines of both trains and the tender of the passenger train was forced upon its front end and jammed up against the boiler head of the engine The baggage car of train third No 39 was entirely demolished, while the coach telescoped the colonist car directly behind it for about two-thirds of its length Both of these cars, however, remained upright on the track Illustration No 3 is a view of the damaged colonist car after it had been thrown down the bank to clear the track The second colonist car remained on the rails and was but slightly damaged, while the remaining cars in the train sustained practically no dam-

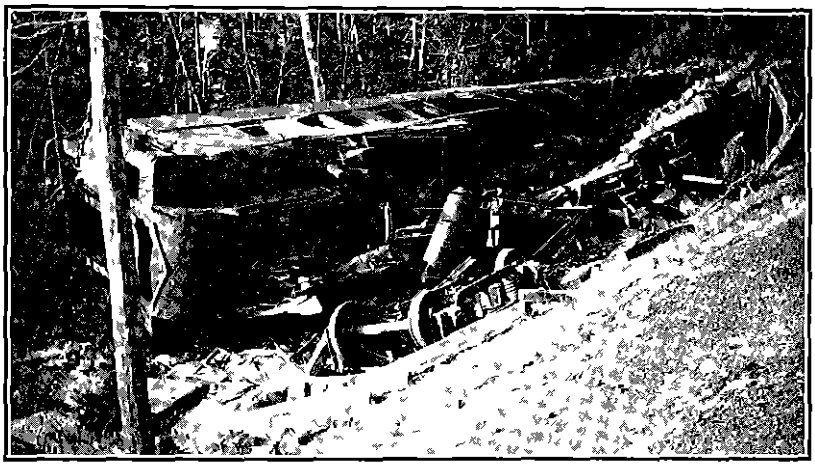

FIG 3 —Wreckage of third car in train 3d No 39 after it had been cleared from the track

age The tender and first seven cars of the freight train were derailed to the south side of the track, while the eighth car was derailed to the opposite side One truck of the ninth car was derailed, but this car sustained only slight damage The enginemen and firemen of both trains were killed

Conductor Dillon, of train third No 39, stated that before his train left Brownville Junction the air brakes were tested and all were in good working order Leaving Brownville Junction he held a copy of train order No 28, directing his train to run five hours late from Barnard to Boundary, which would make it due to leave Onawa at 6 59 a m He stated that as the train passed Onawa he looked at his watch and it then showed the time as 7 09 a m He estimated that the accident occurred between 7 13 and 7 14 a m , at which time the speed of his train was between 25 and 30 miles an hour He stated further that he felt no application of the brakes prior to the collision

Flagman Williams, of train third No 39, stated that he checked the time that his train passed Onawa as 7 09 a m At the time of the accident he was riding in the cupola of one of the cabooses, but on account of the curve he was unable to see ahead sufficiently to see train first No 78 approaching He stated further that he felt no application of the brakes prior to the collision He estimated that the speed of his train at that time was about 25 miles an hour

Head Brakeman Cook, of train third No 39, stated that he was riding in the first car of the train passing Onawa and then went back to regulate the heat in the fourth car He was in the aisle of the fourth car when the collision occurred He estimated the speed of his train at the time at 21 or 22 miles an hour Brakeman Cook further stated that after the accident he talked with Conductor Manuel, of train first No 78, who remarked that he overlooked train third No 39

Car Inspector Coburn, on duty at Brownville Junction, stated that he inspected the air brakes on train third No 39 before its departure and that all of the brakes were in good operating condition

Head Brakeman Austin, of train first No 78, stated that when his train left Greenville it was expected that train third No 39 would be met at Morkill, and upon arrival at that point he got off the train and opened the west switch to the siding As the train was pulling into the siding the operator came out of the office with a train order, form 19, and gave him one copy, but said nothing either to him or to the engineman relative to its contents Brakeman Austin stated that he boarded the steps of the engine and handed the train order through the window to Engineman Bagley, who read it and remarked, "We have eight hours on third No 39" The train then pulled through the siding and the engineman told him to open the switch at the east end He did this, then climbed up on top of the train to see that the switch was closed after the train pulled out of the siding He then returned to the cab of the engine, where he took the brakeman's seat on the left side A proceed signal was given from the rear of the train He stated that the first intimation of the impending accident which he received was when the engineman shouted, "Look out, boys," at the same time applying the air brakes in emergency He looked up and saw the engine of train third No 39 about 100 feet away Brakeman Austin estimated the speed at the time of the collision at about 20 miles an hour He also stated that the brakes had been working properly on this trip

Flagman Gardiner, of train first No 78, stated that at Greenville the crew of his train received a copy of an order stating that train third No 39 was running five hours late, and shortly after leaving Greenville he and the conductor calculated that their train would

have time to reach Morkill for train third No 39 As the train pulled into the siding at Morkill the operator handed a copy of a train order on to the head end and a second copy to Engineman Chase, who was deadheading in the caboose and at the time was standing on the forward caboose steps As the caboose passed the telegraph office Conductor Manuel told him that the order gave them more time on train third No 39, and then instructed him to go out on top of the train, turn up some of the retainers, and give the engine crew a proceed signal Flagman Gardiner stated that he did as instructed and returned to the caboose after the train had proceeded about a mile beyond Morkill The train order that had been received at Morkill was at that time lying on the table and he picked it up and read it, getting the impression that train third No 39 was eight hours late He did not discover his error until after the accident occurred and was unable to account for not having read the order correctly At the time of the accident he was in the caboose caring for his marker lamps, which he had just extinguished He felt the emergency application of the brakes just a few seconds before the collision occurred and estimated the speed of his train at the time to have been 25 or 30 miles an hour

Engineman Chase, who was deadheading in the caboose of train first No 78 from Greenville Junction to Brownville Junction, stated that as the train was pulling into the siding at Morkill he saw the train order signal at stop and he and Conductor Manuel alighted from the caboose and started to walk toward the telegraph office He then saw the operator come out of the office with a "19" train order, and as the train pulled along the siding he boarded the forward caboose steps, while Conductor Manuel boarded the rear steps Engineman Chase stated that when the caboose passed the operator the operator gave him a copy of the train order, apparently thinking he was the conductor, but he heard the operator make no remark concerning it He then took the order into the caboose and gave it to Conductor Manuel, who read it and handed it to the flagman Engineman Chase stated that he did not know the contents of the order but supposed it was an order to meet train third No 39 at some point east of Morkill He then went up into the cupola of the caboose to go to sleep and was half asleep when the accident occurred He admitted that at the time he took the order from the operator Conductor Manuel was standing on the rear steps of the caboose, and that he should not have taken the order, but left it to be delivered directly to the conductor

Conductor Manuel, of train first No 78, stated that at Greenville he received a copy of train order stating that train third No 39 was running five hours late, and he expected that his train would be able to reach Morkill for that train He also had an idea that upon

reaching Morkill he would receive another order advancing his train farther against train third No 39 and that the dispatcher would get his train into Brownville Junction before the crew exceeded their legal period of 16 hours on duty As the train pulled into the siding at Morkill he was standing on the rear steps of the caboose, while Engineman Chase was standing on the front steps He saw the operator come out of the office, deliver a copy of the train order to Engineman Chase, and heard the operator say something about eight hours Due to the fact that he had been expecting an order advancing his train against train third No 39, and to the fact that the operator came out so promptly with an order, he assumed before reading it that train third No 39 was running eight hours late He immediately went into the caboose and met Engineman Chase, who gave him the order He stated that he glanced over it and read it as giving his train eight hours against train third No 39 instead of against train fourth No 39, and so remarked to the flagman He then instructed the flagman to go out on the train and turn up some of the retainers, after which he himself went up into the cupola of the caboose, where he remained until the collision occurred He stated that he felt the application of the brakes just before the shock of the collision, and estimated the speed of his train at the time at about 25 miles an hour Conductor Manuel further stated that there was nothing confusing about the order had he read it carefully

Operator Kingdon, on duty at Morkill at the time of the accident stated that when he heard train first No 78 approaching in the distance he informed the train dispatcher by telephone, whereupon the train dispatcher issued order No 47, which stated that train third No 39 was late, and that train fourth No 39 would run eight hours late This order was completed at 6 50 a m The dispatcher then instructed him to have the order ready so that they might go When the train got quite close he went out with the copies of the order and a clearance card and delivered one copy of each to the brakeman, who was riding on the pilot of the engine, and a second copy of the order to a man who was riding on the front steps of the caboose As he delivered this second copy he said, "Eight hours on fourth No 39" Another man who was riding on the rear steps of the caboose, and who the operator thought might be the conductor, replied, "Eight hours" The train pulled through the siding without stopping, departing at 6 59 a m, and the operator returned to the telegraph office and attempted to report the arrival and departure of the train, but found the circuit engaged After waiting one and one-half or two minutes he reported the departure of the train to the dispatcher, who remarked, "They have gone, have they?" Operator Kingdon further stated that he assumed train first No 78 had taken the siding at his station to meet train third No 39 and

thought it was strange that they should proceed when the order they received at his station only gave them time against train fourth No 39 He did not know, however, how late the third section was, and concluded that the crew of train first No 78 knew what they were about and gave the matter no further consideration He said that it did not occur to him to ask the crew where they were going for train third No 39 when he saw the train departing Operator Kingdon also stated that in delivering train orders, Form 19, it is the practice if a train is standing to deliver the order to the conductor and engineman personally, but if moving it is delivered to anyone who is on hand to receive it

Operator Valley, who is employed at Morkill from 8 a m to 4 p m, stated that on the morning of the accident he rode from Greenville to Morkill in the caboose of train first No 78 and knew that train third No 39 was running five hours late, and that the crew of train first No 78 was intending to meet that train at Morkill On arriving at Morkill, Operator Kingdon handed an order to Engineman Chase, who was riding on the front steps of the caboose, and he heard Operator Kingdon shout, "Eight hours" Operator Valley stated that he did not know of the existence of a fourth section of train No 39, and assumed that the order gave train first No 78 eight hours instead of five hours against train third No 39 He stated further that before Conductor Manuel read the order he requested him to close the switch at the east end of the siding after the train was out Operator Valley stated that he alighted from the caboose at the east end of the siding and closed the switch as requested, and then walked back to the telegraph office, reaching the office at about 7 05 a m He stated that he thought it very strange that the crew of train first No 78 should be given eight hours against train third No 39 when they had only five hours against it at the time they departed from Greenville, seven miles west He kept saying to Operator Kingdon that he could not understand the situation, but Operator Kingdon made no reply After the accident, however, Operator Kingdon told him that he had not understood what he was talking about

Train Dispatcher Shaw, who was located at Brownville Junction and was on duty from midnight until 8 a m, stated that he issued train order No 20 to the crew of train first No 78 at Greenville, which order provided that train third No 39 would run 4 hours and 20 minutes late Later he issued train order No 28 to train first No 78 at Greenville, annulling train order No 20 and directing train third No 39 to run five hours late A copy of train order No 28 was also sent to train first No 78 at Moosehead by westbound extra 3470 When train first No 78 was reported as leaving Greenville he expected that it would make Morkill for train third No 39 He stated

that to the best of his recollection train first No 78 was first reported to him from Morkill, when the operator told him that the train was entering the siding, and at that time he thought the train would remain there for train third No 39 It was at this time that he issued train order No 47, which stated that train third No 39 was late and that train fourth No 39 would run eight hours late He could not recall at what time Operator Kingdon reported the departure of train first No 78, but he thought it might have been as early as 7 01 as stated by the operator The departing time given was 6 59 a m When he learned that the train had departed it was in his mind that the crew had decided to make Bodfish for train third No 39 He stated that he was unusually busy at this time, having nine trains on his district and having issued several orders He was therefore not concentrating particularly on the two trains involved in this accident and did not realize at that time that it would be necessary for train first No 78 to leave Morkill not later than 6 45 a m in order to reach Bodfish and clear train third No 39, which under its run-late order was due at that point at 7 05 a m He stated that he did not figure just where the two trains would meet, but gave them the time order and left the matter to the judgment of the crews He stated further that he did not discover that train first No 78 did not have time to make Bodfish until he began to check up the time after his telephone circuit failed at 7 15 a m on account of the collision He admitted that had he discovered that train first No 78 did not have time to make Bodfish for train third No 39 at the time its arrival and departure was reported to him by the operator at Morkill, he probably could have stopped train third No 39 at Onawa Dispatcher Shaw further stated that it is his practice to give time orders to inferior trains and not figure out what point they can reach, but to let them go as far as they can The fact that train first No 78 took the siding at Morkill for train third No 39 and afterwards proceeded to the next station did not raise any question in his mind, as it frequently occurs that trains take a siding and afterward the crews change their minds and proceed to the next station

Superintendent Boyle stated that in his opinion Train Dispatcher Shaw was not too busy to have kept a check upon train first No 78 and anticipate at what point it would meet train third No 39 and that it is the practice of the dispatchers under his jurisdiction to keep a check on such movements He also stated that the train orders involved were properly issued in accordance with instructions from the general superintendent

This accident was caused by the failure of Conductor Manuel and Engineman Bagley, of train first No 78, to read train order No 47 correctly

The evidence indicates that Conductor Manuel was anticipating additional time on train third No 39 upon arrival at Morkill, and the appearance of the operator at Morkill with a train order led him to jump to the conclusion that the order provided for this additional time Under these circumstances he read the order as giving his train the additional time he had anticipated Engineman Bagley being killed in the collision, his failure properly to read the train order can not be explained The head brakeman's testimony indicates, however, that the engineman made the same error as did the conductor and also the flagman Although the conductor and engineman, being in charge of the train, are responsible, Flagman Gardiner also read the order Had he read it correctly he would have noticed the mistake and the train could have been stopped Under these circumstances he must share in the responsibility for this accident

Train Dispatcher Shaw was extremely negligent in the performance of his duties Had he been on the alert and fully alive to the responsibilities of his position he would have discovered that train first No 78 was running against train third No 39 without authority when it left Morkill, and he could then have taken measures to avert this accident Under train order No 28, train third No 39 was due at Bodfish, 5 3 miles east of Morkill, at 7 05 a m and at Morkill at 7 19 a m Under the Canadian Pacific rules inferior trains are required to clear opposing superior trains at least five minutes This would require train first No 78 to be at Bodfish at 7 a m , when as a matter of fact they did not leave Morkill until 6 59 a m The evidence indicates that Dispatcher Shaw knew not later than 7 02 a m of the departure of train first No 78 from Morkill and he should have discovered at once that something was wrong and have stopped train third No 39 at Onawa, which point it did not pass until 7 09 a m , and have held them until he could have gotten into communication with train first No 78 He knew that train first No 78 had taken siding at Morkill for train third No 39, expecting to meet it there and then proceeded without receiving any additional time on that train This of itself should have been sufficient to raise a doubt in his mind

Under ordinary circumstances it would appear that Operator Kingdon, on duty at Morkill, would be subject to censure in that he failed to hold train first No 78 at his station until the arrival of train third No 39 He admitted that a question arose in his mind as to where train first No 78 was going for train third No 39, and he should have questioned the train crew at once regardless of any delay that might have resulted, or, failing in that, he should have called it to the attention of the train dispatcher However, in this case the remarks which he stated the train dispatcher made to him at the time order No 47 was issued, and also after the departure of train first No

78, would naturally lead him to believe that he was not cognizant of all the circumstances and that the move was proper and had the approval of the train dispatcher

It is possible that had Conductor Manuel received train order No 47 directly from the operator instead of through the medium of Engineman Chase, he would have read it more closely and also might have heard the full remark of Operator Kingdon Engineman Chase was deadheading on this train and took upon himself the duty of receiving the train order, although Conductor Manuel, the proper person to receive it, was on the rear steps of the caboose for the express purpose of getting it Notwithstanding the apparent interest which Engineman Chase took in getting this order he claimed that he did not read it or know its contents The practice of employees not on duty, or others, meddling in train movements in which they are in no way concerned, except in case of emergency, can not be too strongly condemned

The first car in train third No 39, a baggage car, No 4794, was of wooden construction and of the box-car type Had it not been for the complete destruction of this car in absorbing the shock of the collision, the loss of life and the number of injured in the cars following probably would have been much greater The coach and colonist car directly behind the baggage car were of wooden construction and were equipped with wide vestibule steel platforms steel bolsters, and steel needle beams The end body frames were reinforced by steel angle posts and flat steel bars The cross floor beams consisted of two steel needle beams and wooden crossties Had these two cars been of all-steel construction it is probable the number of casualties would have been materially reduced

Attention is called to the fact that a form of block system is in use on this line between Brownville Junction and Barnard, and also between Megantic and Boundary, to facilitate the movement of trains out of terminals and to reduce the number of train orders The records show that during the first 15 days of December, 1919, an average of 41 trains a day were handled over the Moosehead subdivision While traffic is not as heavy in summer time, it is believed that conditions as a whole warrant the establishment of a block-signal system As at present operated there are nine day and night offices between Barnard and Boundary, a distance of 93 4 miles Had there been an adequate block system in use between Barnard and Boundary this accident probably would not have occurred, and to prevent the recurrence of accidents of this character, it is recommended that the block system be placed in effect on this line

Conductor Manuel entered the service of the Canadian Pacific Railway as brakeman in 1901 and was promoted to conductor in 1904 His service record was excellent Engineman Bagley entered

the service as section man in 1892, was promoted to fireman in 1907, and to engineman in 1911 His record was good Flagman Bagley had been employed in train service three winters During the other portions of the year he had been employed in clerical and track work, his record was clear Train Dispatcher Shaw entered the service as operator in 1907, was promoted to train dispatcher in 1910, and worked intermittently as train dispatcher, operator, and rules examiner until 1915, since which time he has been working regularly as train dispatcher His record was clear

At the time of the accident the engine crew of train first No 78 had been on duty 13 hours and 59 minutes, prior to which they had had more than 17 hours off duty The train crew had been on duty 13 hours and 44 minutes, prior to which they had had 18 hours off duty Dispatcher Shaw had been on duty 7 hours and 15 minutes prior to which he had had 16 hours off duty

Respectfully submitted

W P Borland,
Chief, Bureau of Safety

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D C
AT
5 CENTS PER COPY
SUBSCRIPTION PRICE, 20 CENTS PER YEAR

WASHINGTON GOVERNMENT PRINTING OFFICE 1920