Paintings for Fortune by Charles Burchfield

THE HUMP: A DOWNHILL TRACK THAT STARTS CARS ON THEIR WAY TO BECOMING TRAINS
Pennsylvania Railroad: I

America's best-nourished transportation system is also one of its most skillfully operated. What the Pennsylvania System is, how it grew, how the trains run, and where gross revenues of $393,000,000 come from.

DO NOT think of the Pennsylvania Railroad as a business enterprise. Think of it as a nation. It is a bigger nation than Turkey or Uruguay. Its boundaries are wider and it has larger revenues and a larger public debt than they. Corporately also it behaves like a nation; it blankets the lives of its 100,000 citizens like a nation, it requires an allegiance as single as a patriot's. The Pennsylvania man who, trained to the railroad, forsakes it, is as abnormal as the U.S. citizen who expatriates himself.

And it is a nation always at war, a war that started when the first train ran in 1846 and will end when the last locomotive fire or fuse burns out. Its fronts are time, death, and weather, and 85 per cent of the population is on the front every day. This is not an idle analogy. The day's work of the Pennsylvania Railroad, which has an excellent safety record, killed 547 people last year and another 1,889 were wounded because the trains ran. (None of these were passengers.) And the Pennsylvania, in the manufacture of its invisible product, is perhaps as nearly self-sufficient a congeries of assorted industries as the U.S. Army itself. It owns, controls, or operates not merely locomotives and cars and tracks and stations but also ferryboats and tugboats and derricks and wharves and snowsheds and bridges and grain elevators and power plants and a telephone system and a telegraph system and sewer companies and city lots and coal mines and timberland and commissionaries and care factories and locomotive factories and brass foundries and iron foundries and machine shops and water reservoirs and planing mills and hotels and a chain of Y.M.C.A.'s and fleets of trucks and an oil-mixing plant and stockyards and pasture land and dwellings and laboratories and traveling cranes and trestles and tunnels and ice plants and hook-and-ladders and a million other things, all of which are adjuncts of the moving of trains.

The men who move these trains are soldiers, with no more private lives than other soldiers. They are subject to a strictly military discipline of orders, reprimands, citations; they are on call for duty day and night. Even the noncombatant 15 per cent—the traffic men and office workers—like their armed compatriots of the tracks and trains, live under martial law. For example, they are not fired—they are put on "extended furlough" (their pay stops, of course). The classifications of rank and pay are no less rigid and public than the U.S. Army's. There is the same jealousy among the officers' wives and the same soldierly acceptance, not without bitterness, of missed advancement; for the standards of advancement are commonly understood, and they relate to the integrated virtues of the whole man—heart, back, and hand no less than head—and to some special adaptation of the acquisitive instinct as in the business world. You do not love money if you work for the Pennsylvania Railroad. You do not love freedom either, except as it comes at seventy, wrapped in a pension and an honorable record. Your time is not your own and there are no private satisfactions. There is only one satisfaction, a deep one common to the entire population: that of performing the daily miracle of moving five thousand gigantic, temperamental, ponderous, menacing groupings of tonnage precariously from here to there.

The Pennsylvania is the most powerful of all the railroad nations in this hemisphere. If all were of its size, there would need be only ten railroads in the U.S. instead of some two hundred. Although the track in the Pennsylvania system (26,800 miles) is only 6.6 per cent of all the track in the U.S., the Pennsylvania's revenues are 11 per cent of all railroad revenues. Its employees are 12 per cent of all railroad employees and they receive 11 per cent of all railroad wages. One of every ten locomotives in the U.S. belongs to the Pennsylvania, as do 13.7 per cent of all the freight cars and 15 per cent of all the passenger cars. A dime of every dollar invested in all railroads has been spent to build the Pennsylvania. Of every hundred tons of freight that moved a mile by rail in the U.S. last year, the Pennsylvania carried ten, and it carried one passenger of every five. Half the people of the U.S. live in the territory it drains—which is the central East, from St. Louis and Chicago to Long Island and the Chesapeake Bay.

THIS railroad is the strongest but not the only nation in the East. Besides its unremitting warfare with the laws of physics, it must carry on a diplomatic struggle with rivals to north and to south, notably the New York Central and the Erie and the
ALTOONA: 150 ROAD-WORN LOCOMOTIVES A MONTH ENTER THE JUNIATA SHOPS AND COME OUT AS GOOD AS NEW

Passenger engines are due for an Altoona overhauling about every 100,000 miles; freight engines, every 75,000. The engine house itself is a small part of the Works. For all standard repair parts are made at Altoona: hence, iron forges and foundries, drop hammers, presses, a pressed-steel shop, a brass foundry and finishing shop, a spring shop, machine shops—as well as erecting shops where

Baltimore & Ohio. Not for thirty-five years has there been a rate war between the nations. But the day when they will acknowledge one sovereign is probably at least as far in the future, and the unsmiling horseplay of politics goes on exactly as it does among France, Germany, Italy, and England, although with less menace to civilization. This diplomatic contest is waged largely by the multitudes of the traffic department. But when a major question like boundaries is in dispute—as in the years of the great Consolidation poker game from 1926 to 1932—the heads of the nations themselves may turn their attention to foreign affairs. The Pennsylvania's late emperor, General Atterbury, was peculiarly accessible to his foreign ministers, Vice Presidents Albert John County and the late Elisha Lee. The conduct of the operating war during those years was left to Martin W. Clement, who has since succeeded to the throne without leaving the front, and the subtle Mr. County now nurses alone the remnants of his territorial schemes.

It evokes no great regret when a small and well-knit nation like Sweden or the Pittsburgh & Lake Erie brings its citizens through a world depression with a comparatively clean record of happiness and dividends. But when an empire like the Pennsylvania does it, it is as though Great Britain herself had come through without a breadline. The strength of the Pennsylvania is not merely the size of its revenues (which the Central's at least approach as a limit) but its nimble, feline powers of self-preservation when that support is removed. In 1932 U.S. railroad revenues reached a seventeen-year low. The Pennsylvania System, used to an income of well over $600,000,000, took in $460,000,000. The New York Central, the B. & O., the Erie, tapping the same rich terrain, did not take in enough to pay all their bills. Nor have all of them yet resumed doing so. But in 1932 the Pennsylvania Railroad Co. earned and paid a $9,600,000 dividend. In the three years since then it has divided $93,000,000 more. There has in fact been no year since 1847 in which the Pennsylvania did not pay a dividend.

But while it has ruthlessly cut operating expenses in order to maintain dividends, the Pennsylvania has also contrived to make during the last five years a far huger capital expenditure than any other railroad in the country: $100,000,000 for the electrification of its New York-to-Washington division, which put 10,000 men to work and of which Mr. Ickes privately considers his share ($70,000,000) to have been one of the most thoroughly satisfactory of all the PWA loans. The Pennsylvania has since paid off a third of the $100,000,000.

But the strength of a nation should not be measured by mere solvency. Is the Pennsylvania just large and lucky, blessed above its neighbors with a fertile soil and a discreet capital structure? The capital structure is discreet, being about 46 per cent funded debt.
as against 55 per cent on the New York Central and 56 per cent on all U.S. railroads. The Pennsylvania's industrial soil is extraordinarily fertile, but so is the New York Central's. It is if anything less hospitable to the running of trains than is the New York Central's. The important fact is that the Pennsylvania, thanks to consecrated and competent officers, both line and staff, has developed an almost peerless military technique.

Of the eighteen scheduled runs in the U.S. of seventy miles an hour or more, eight are on the Pennsylvania, including the fastest and next fastest (the Union and Detroit Arrow, 75.6 and 75.4 miles per hour for forty and sixty-four miles out of Valparaiso and Plymouth, Indiana, respectively). The two fastest electric runs are on the Milwaukee out of Kenosha, but of the ninety-two electric runs of more than sixty miles per hour in the country, sixty-four are on the Pennsylvania, as are eighty-eight of the 208 runs of this speed on all American railroads, steam, electric, or Diesel. Every day some 19,000 miles are ticked off by American trains in a scheduled time of a minute or less; and more than 8,000 of these miles are ticked off on the Pennsylvania.

These are small-boy statistics. Harder to govern and more meaningful when you do, are such things as ton-miles of revenue freight per train-mile, freight revenue per train-mile, and per cent empty of loaded freight car miles. Figures like these are the essential components of a good operating ratio, which is the relation of operating costs to revenues and therefore, provided you don't chisel on maintenance costs, a measure of operating efficiency. The Pennsylvania's operating ratio (72.0 last year) is the lowest of the major eastern trunk lines. The average for U.S. Class I roads is 75.1. Of course the character of the terrain and of the traffic are accidents affecting this ratio. Because coal can always be loaded to the maximum capacity of each car and because coal is more important in the Pennsylvania's total tonnage than in that of the New
practice of railroading is than its economics. We shall also see why its economics are under attack. But if you want the reason for the Pennsylvania’s low operating ratio and unfailing earnings, it is that its war is conducted with these three axioms as a daily password and battle cry. For so large, rich, and powerful a country, the Pennsylvania has a remarkable singleness of purpose.

Ninety years of a railroad

UNTIL the completion of the Erie Canal, Philadelphia was the largest city in the New World, and it was the hope of regaining the lead that led the citizens of Philadelphia to found the Pennsylvania Railroad Co. in 1846. The forehanded Baltimore & Ohio, already awaiting the permission of the legislature to enter Pitts-burgh, was prodding the Quakers from the other side; for a while the new traffic rising in the West threatened to evade the port of Philadelphia altogether. The legislature, however, issued a franchise in the nick of time, smitten from the start with a slightly cowed tenderness toward the new road, which has lasted into its nineteenth year. The railroad was only six years old when it had the good fortune to acquire a king of genuine force—J. Edgar Thomson, for whom a supplementary act of incorporation was passed at Harrisburg, giving him broad investing powers and enabling him to buy controlling interests in other railroads all the way to the Mississippi. An able engineer, he bought and built with discretion, and by the time he died in 1874 the pattern of the Pennsylvania was established virtually as it is today: roughly, a straight line from New York through Philadelphia to Washington, a

York Central, the Pennsylvania shows a slightly greater revenue per loaded freight car mile than its neighbor, and this favors the Pennsylvania’s operating ratio. But in general the traffic and terrain of the central East are sufficiently homogeneous to justify the strong suspicion that the Pennsylvania takes a closer advantage of its opportunities than any of its competitors.

The economics of railroading are exceedingly simple. The car is the unit of revenue and the train is the unit of expense—for the gross cost of a train-mile varies almost imperceptibly whether the locomotive is pulling five cars or a hundred. So you do three things: (1) load as much revenue as you can into each car; (2) get as many cars as you can into one train; (3) run as few trains as possible. We shall see how far more cumbersome and complicated the

ALL PRE-1906 CARS ARE DOOMED

... in the Pennsylvania’s current car-destruction program. When you see a boxcar with a white line through the number on its side, it is slated for the car pyres at Lucknow, Conway, or Terre Haute. Nothing is wasted. Sound lumber is used to build new grain doors; rods and bars are cut to scrap length; and 70 out of every 100 trucks move right over to the reconditioning tracks to be used in 10,000 new cars the Pennsylvania is building.

LUCKNOW REPAIR YARDS: THE SALVAGE VALUE PAYS FOR THE DESTRUCTION
crooked line from Philadelphia to Pittsburgh, and diverging straight lines from Pittsburgh to Chicago and St. Louis.

A committee of curious stockholders who investigated the properties in 1874 announced the principle that the Pennsylvania's proper termini were and should remain Philadelphia and Pittsburgh. Their audit suggested that all foreign-road holdings be written down by some $10,000,000, but that the main line was worth almost double its $48,500,000 book value. Although the Pennsylvania today operates in thirteen states and is owned in forty-eight (plus fifty-one foreign countries), you may still remark the same assumption in Pennsylvanians that any tracks they may have beyond these termini are somewhat tentative ventures into the surrounding wilderness.

Edgar Thomson acquired other things besides railroads. He bought the first really powerful American locomotive, a Mogul of 1866, and he used the first set of air brakes George Westinghouse sold in 1869, and in those two purchases he announced the modern age of long-train railroading. He bought 28,000 acres of anthracite-coal mines in order to keep this traffic from the Reading and Commodore Vanderbilt, and he bought the first block of stock sold by the Pennsylvania Steel Co., first American practitioners of the Bessemer process, which made every iron rail obsolete. Meanwhile Mr. Thomson's Vice President and successor, Colonel Thomas Scott, was developing an

other famous industry on his lines: the South Improvement Co. of Cleveland. The pooling agreement of 1879 gave the Pennsylvania a full 45 per cent of Mr. Rockefeller's eastbound oil; the Erie and the New York Central divided the rest. It was worth while even though you had to pay the South Improvement Co. a rebate and a drawback—as Tom Scott found out in 1877. That was the year when he wavered, and backed his own forwarding company, the Empire Line, in its brave attempt to break the trust. For a while the Pennsylvania was carrying independent oil to the sea at a rate of minus eight cents a barrel. Its gross revenues dropped from $36,000,000 to $31,000,000; wages were cut 10 per cent; the consequent strike in Pittsburgh turned into a riot that cost the Pennsylvania another $4,000,000 in property damage; and Tom Scott sued for peace. When the new pool was drawn in 1878, the Pennsylvania was guaranteed 2,000,000 barrels a year.

A CONSTRUCTION engineer named George Roberts led the Pennsylvania through the eighties, the decade during which America built more railroads than ever before or since. But the Pennsylvania, except for minor extensions and shortcuts, had no more real construction to do. The building fever did tempt others into Pennsylvania territory. It was in '83 that William H. ("public be damned")Vanderbilt, crying that he would free Pittsburgh from the thralldom of the Pennsylvania, began to build a South Pennsylvania Railroad as a westward extension of the Reading. Meanwhile his own domain had been invaded by the equally supererogatory West Shore, in whose nasty tracks the odor of Pennsylvania capital was strongly discernible. This flurry of boyish spirits was eventually stilled by the elder J. P. Morgan, who marooned Messrs. Roberts and Vanderbilt on the Corsair until they had agreed to buy each other out. It was an agreement that foreshadowed others. For it was to take the Supreme Court only a few years to emasculate the Interstate Commerce Act of 1887, and the railroads (who hated rate cuts more than rate discrimination anyway) consequently began to regulate themselves. When the last of the rate wars in 1899 drove its average ton-mile revenue to an all-time low of 4.7 mills, and the great Alexander Johnston Cassatt succeeded to the presidency, the Pennsylvania took the lead in Morgan's Community of Interest plan, under which it bought control of its competitors to the South: the B. & O., the Chesapeake & Ohio, and the Norfolk & Western. These purchases cost $90,000,000 but they enabled Mr. Cassatt to double the rate on steel to the seaboard—a factor in the preparation of Mr. Carnegie's mind for retirement and hence in the creation of U.S. Steel (Fortune, March and April, 1936, and this month beginning on page 99).

Mr. Cassatt survived by less than a year the Hepburn Act of 1906, which inaugurated federal regulation of rates. But in the seven
OPERATIONS: JOHN F. DEASY

years of his presidency he doubled the revenues of the Pennsylvania and tripled its net. He was the first President to believe that New York was always going to be larger than Philadelphia, and accordingly he bought the Long Island Railroad and began the construction of the two tunnels under the Hudson and the four under the East River and the gigantesque Pennsylvania Terminal and the vast yards and carfloat bridges at Jersey City and the piers and freight stations in Manhattan and Brooklyn that remain the Pennsylvania’s toughest ligaments around the traffic of New York today. Most of this work was finished under his successor, James McCrea, but it was President Cassatt who launched it and his

engineer Samuel Rea who saw it through.

As President from 1913 to 1925, Samuel Rea led the Pennsylvania through its most discouraging period. In those twelve years the annual gross revenues of the System increased 87 per cent, reaching the all-time high of $775,000,000 in 1923, but the net increased only 42 per cent; and although the cost of transportation to the shipper rose from 6.0 mills to 10.6 mills per ton-mile, the railroad’s net operating profit per ton-mile actually declined. For that was the era when the public interest with which all railroads are affected became a public furor when labor, with the acquiescence of a nation at war, demanded and received its rights; when taxes more than doubled; when an insatiable bond market extracted larger and larger hostages to income; when American railroads, in short, changed from a menace to a millstone, and their managers from pirates to petitioners. The morale of the Pennsylvania was peculiarly bashed by government operation during the War. The pride of its passenger fleet, the Broadway Limited, was taken off the rails, while the New York Central’s Twentieth Century continued to perform the New York–Chicago run (and thereby gained an edge on this traffic that has continued to the present day). The B. & O., with which competition had been restored when the Pennsylvania sold its holdings in 1906, was given trackage rights into Pennsylvania’s Manhattan terminal, nullifying until 1916 the Pennsylvania’s chief advantage on the New York–Washington traffic. In December, 1919, the Pennsylvania had the most suffocating pay roll in railroad history—80,000 men, $500,000,000. And when Operating Vice President William Wallace Atterbury, after the roads were returned to their owners, led the “Bourbon clique” in abandoning the national wage agreements that the government had made with labor and made direct (“company union”) agreements with his own employees, he set off a series of vibrations that traveled over every mile of American rail and finally detonated the nationwide shopmen’s strike of 1922. With rates of pay slashed 12½ per cent and 80,000 men furloughed, its employees soon gave the largest railroad in the country a wide reputation for being also the saddest. Even the train service employees—conductors, engineers, brakemen—who were represented by national Brotherhoods, became an army of chip-shouldered time-servers. The reconditioning of this psychological atmosphere and its nose-wrinkling effect on the shipping and traveling public became the principal study of General Atterbury’s friend, the late Ivy Lee.

Mellon, the General, who became President in 1925, had already begun his attack on the operating ratio. In 1921 it was 87.5; in 1926 it was 77.5. Although the General, a first-class operating man, soon turned his attention from the operating ratio to the elaborate diplomatic pastime of keeping up with the Van Sweringens, the ratio continued to fall, for the trains were being run by Vice President Martin W. Clement. In 1929 (the same year the General’s Pennroad Corp. was formed) Mr. Clement’s operations showed an all-time record net of $115,000,000.

How to run a railroad

BUT how do you run a railroad? The first thing you do, of course, is to delegate the work. Its method of delegation is one of Pennsylvania’s many contributions to the inexact science of large-scale railroad ing. The empire is divided into four almost

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Note: The text is a blend of descriptive and narrative elements, possibly discussing historical events and economic factors. The content is rich with historical context and specific references to railway operations and management.
autonomous kingdoms, each under a Vice President. Horace Edgar Newcomer rules from central Ohio to the Mississippi and north to Mackinaw; one-third of all the line mileage in the System is his, and three of the ten largest cities in America; but most of it is two-track railroad and a comparatively simple operation, with little density. Ethelbert Walton Smith rules the central region, from Ohio eastward over the coal-rich Alleghenies to Altoona, and north to Rochester and Buffalo. He originates more freight than any other kingdom and commands the System's ruling grade and the hairpin curves about Altoona, where for five miles even the Broadway must not exceed thirty miles per hour. Richard Carey Morse's eastern region, from the mountains to the Chesapeake and New Jersey, has the densest U.S. movement of freight trains, and George Lebournillier's New York zone, which includes Long Island, has the densest U.S. passenger traffic. Under these Vice Presidents are general managers, general superintendents, and division superintendents. But over them are still other Vice Presidents—the System officers who rule from Philadelphia and who constitute a sort of Emperor's Council. The functions of the System Vice Presidents include traffic, finance and corporate relations, purchasing, real estate, accounts, and various special duties. But the System Vice President who controls and harmonizes the activities of the regional Vice Presidents is John Francis Deasy. His is the job Martin Clement used to have: secretary of war, which is to say Vice President in Charge of Operations.

John Deasy tries to spend two weeks of every month on the road. (All railroad men like nothing better than a good long train ride.) Reports, although he gets them from every region every day, are no substitute for front-line observations in telling him what he wants to know about the progress of the Pennsylvania's war. It is from the individual superintendents who command

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**THERE IS NO TYPICAL STRETCH OF PENNSYLVANIA TRACK**

... for railroading changes its rules with every change in landscape. Which is why promising young operating men are transferred far and often on the Pennsylvania, that they may learn all the rules. But in the six-mile stretch east of Pittsburgh that is diagrammed on these four pages the Pennsylvania provides a greater variety of structural and operating detail than you will find in any equal stretch. Note especially: (1) Private industrial sidings, where most cars begin and end each trip. (2) Freight station, where small shipments are loaded from tracks to boxcars or vice versa. (3) Classification yard and hump operation, where individual cars are built into road trains. (4) Block signal bridges, which prevent trains running on the same track from overtaking each other. (5) Interlocking plant, a series of cutovers between tracks making possible more flexible operation of trains. (6) Engine house and car shops, where rolling equipment is kept in running order. These are high spots. But to know what goes on at each of these high spots is to have learned Lesson I in the primer of railroading.
the Pennsylvania’s twenty-eight divisions that Mr. Deasy, as he passes over the line, gets the facts on which to base his larger strategies.

The division superintendent commands his one or five hundred miles of line exactly as Mr. Deasy commands the System. Mr. Deasy issues orders through his chiefs of maintenance, transportation, and motive power; the superintendent through his division engineer, his trainmaster, and his master mechanic. The same triad pattern will be found throughout the operating hierarchy, because the three salients on any railroad front are tracks, trains, and power. Through his engineer the superintendent commands squads of track foremen, who lead their gangs over the section all day long, seeking and fixing loose spikes, low spots, clogged culverts, dirty ballast, landslides, unresponsive switches, dirty windows or weak lamps at the underground pits from which inspectors view the private parts of passing freight cars, faulty connections in the yard steam line that heats parked Pullmans until their engine comes, vandalized tool caches, flails in the hundred yards of hot-water pipes that run in front of track pans so that ice will not form from the drippings of slavering locomotives as they scoop a drink at forty-five miles an hour, breaks in the trip circuit that keeps an automatic stop signal in the bridge a mile behind the train at danger and an approach signal on the bridge two blocks back, spots where the gauge measures more or less than four feet eight and a half inches, low joints, wobbly joints, broken rail, etc.

Through his trainmaster the superintendent commands squads of movement bureau clerks who check all trains moving in the division and summon cars from their sidings and engines from their roundhouses and crews from their beds when the hour approaches: of car service bureau clerks who know what every coach and hopper and Pullman and flat and gondola and boxcar on the division is doing at every minute of the day and who spot them for loading at the shipper’s call or send them to other divisions that need them or back to the Gulf, Mobile & Northern or the Bangor & Aroostook if their month away from home is up, but always loaded if possible; of dispatchers who sit all night by an open phone talking to every block operator on the division and charting the progress of trains miles away like infatuates of a maze puzzle; of block operators who move switches and signals as the distant dispatcher directs, and report the results in terms of trains and the time of day; of train directors who stand like comedy generals peering up the track from the switch tower at the mouth of the receiving yards and shouting gibberish orders to the switch throwers behind them while the men who will relieve them after four high-pitched hours keep an open line to the block operators a mile away, all so that every incoming train will find a track by platform or in yard; of yardmasters who used to be train directors and who keep their hand in just enough to catch their successors in error whenever possible; of assistant trainmasters and chief inspectors and policemen and stationmasters and conductors and brake men and flagmen and switchmen.

Through his master mechanic the superintendent commands boilermakers and machinists and metalworkers and car men and car cleaners and blacksmiths and electrical workers and oilers and welders and firemen and roundhouse help and all the myriad shop specialists who keep rolling stock in running order by scouring the mineral scale from the stomachs of dyspeptic locomotives and refit the superheaters that crowd their bellies like small intestines and who broach and burnish journal bearings and oil-soak cotton waste for freight car journal packing and wool waste for Pullman journal packing and tear down old freight cars and build new freight cars around the tracks of the old freight cars, having first measured and trued and assembled them with cotter pins the size of bananas, and go under and over and through every locomotive after its run for leaks and flaws and noises and pious red hot rivet heads into the echoing sides of new boxcars, half or more of whose parts are dabbed with green paint that, like the plaque on the finished car, tells you to be careful because this is Owners` Property Equipment Trust Series G Fidelity Philadelphia Trust Co. Trustee Owner and Lessor.

What superintendents think about

SO MUCH and more, through his subalterns, the division superintendent superintends. And what does the composite superintendent reflect on as he travels over the division in his private business car every week, like a lesser Deasy? He observes a light (trainless) M1 engine speeding up from Altoona at a cost of about sixty-five cents a mile for coal, water, and crew, which means that last night more locomotives left his division than came or are due in, so that he has had to summon help to handle tonight’s movements. It’s the third time this
week he has had to “balance power,” and if the V.L.8 (fast perishables from St. Louis), which stops in the division to change engines, is not going to come through in sections any more, then he will have another reason to recommend to the General Manager that the coal trains from the Monongahela be doubleheaded into his division; they’ve been running damn heavy anyway and what with no automatic stokers on most of those L’s they had a steam failure just last week... Well, the coal loadings have been slowing down of course: his friend the Abbot of St. Vincent’s, over near Latrobe, where the Benedictsines own a mine, only shipped out three carloads last week and the Pittsburgh Coal Co. only 1,500. Nobody wants coal until the first real frost and then they all want it at once when he’s got things like icebound interlockings to worry about. So he’s been after some of the mine owners to persuade them that now’s a good time to put their tracks in order. You have to go in ten twisting miles anyway to most of those tipples and the way they undermaintain, it’s slow work getting the loads out, even with tough little 0-4-0’s that can get around any curve. And there isn’t a mine in the division that couldn’t use more sidings; they fill them so full with loaded cars waiting for a market that when they do want to ship you can’t get in to do any work. He’s persuaded a few but with others he may have to split the cost. Of course they’re all a little sore about the slow spotting last winter, although he was intercepting every empty hopper that came on the division and fixed up 150 bad-order cars in a week besides.

There was one satisfaction that winter though—the trains kept running and when the river froze they hauled coal to Clareton for the H. C. Frick Co. for the first time in eighteen years... Well, another of those old Americans broke a main pin only 20,000 miles after her last class repairs, with another 55,000 scheduled. Should he send her back to Altoona or scrap her? He is for scrapping but of course he can’t do it without the approval of Mr. Deasy’s chief of motive power, for a new locomotive—even a switching locomotive—costs $50,000 and ten days at Altoona costs about $7,500. But is a thirty-year-old engine worth $7,500?

Well, another trespasser got hit this morning, by the Rainbow; the track foreman had an ambulance there in four minutes (the report says) but the lad died on the way to the hospital. The adjuster has been sent around. Not that he wouldn’t have got hit anyway, but that Rainbow does go like hell out of Plymouth, Indiana, since its New York and Washington sections were combined, because she has to wait fifteen or twenty minutes every blessed day for the local down from South Bend, which thought itself doing well when it met the old connection half an hour later. And the Commission is doubletalk all wrong on the two-cents-a-mile theory but if it should happen to fill up the trains again maybe the chief of passenger transportation will put back a few movements and give us a chance to hang up some more on-time records like 1931’s 97 per cent... Well, the Speed Witch (overnight merchandise, Boston to Washington) lost an hour and twenty minutes at the Greenville interchange yesterday through a derailment at the float bridge. The conductor got his ten cars on the port side O.K. but the water was rough and the second car on the starboard side listed the keel back so

Richard Edees Harrison.
PRESIDENT MARTIN WITHINGTON CLEMENT: OF THE PENNSYLVANIA RAILROAD
far the tracks didn’t meet by four inches and the third car spraddled. And when the superintendent can get that budget item through for a couple of electric jackknife bridges like the one at Harmissum and of a huge extent, that hold a loaded bridge as steady as a concrete pier, why he then could float 5,000 cars a day easy. And for that matter, when will the budget make room for car retarders at Enola? Pitcairn got them in one yard in 1963 and hasn’t paid a ride to go down the eastbound hump since except for safety on an occasional car of explosives. Of course the Pitcairn installation cost about $600,000 but if Enola ever gets back to humping 1939’s 10,000 cars a day retarders might pay out. You’d save a lot on those little gas jitneys alone that scud the brakemen back to the hump for the next ride and they swilling coffee and sandwiches on the way because eight hours a day means just that. Well, the superintendent got down the branch last week where they can weigh 100 cars of Monongahela coal every hour and hump them at the same time; and the new A.A.R. maximum-loading regulations (based on gross tons over axle rating) apparently give slightly heavier loadings than the old system, which allowed you a 10 per cent leeway over your stenciled car capacity. And this spring he must seed that slope; the track foreman says the drainage into the culvert is rising and when the Brownsville washers work this stretch last it found too much mud and the superintendent won’t soon forget that innocent-looking low spot in the track last summer that turned into a collapsed culvert overnight and put the main line out of business for fifteen hours and cost $100,000 to rebuild, to say nothing of the humiliation of sending the Broadway over the B. & O. . . . But that was 1935. . . . And it was nothing compared with The Flood.

Water under rails

Late in February, 1936, division superintendents riding west from Altoona noticed that snow still lay on the frozen mountainsides and took warning. The maintenance engineers saw it too and reckoned again the 7,000 carloads of cinders and slag they had been accumulating and storing since the fall for the usual spring repairs. On Monday, March 16, the rain began. On Tuesday the wardens at five huge Pennsylvania reservoirs (soft, mountain locomotive water) reported to Mr. Deasy that the rain had just started and their dams would hold. But the most widespread flood in U.S. history was just beginning. Landslides smashed through the retaining fences in branch-line cuts below Elmira and Oil City. The Pennsylvania Limited heading eastward up the mountains near Lolly stalled in the mud. Tunnels became sluiceways and bridges (hastily weighted with cars of coal) became dams and cars were derailed and switch towers fell over and pole lines were rooted up and by 6:00 P.M. through service ceased between Harrisburg and Pittsburgh. That day the Pennsylvania bought 10,000 carloads of crushed rock. Nobody sleeps much in a flood but rail-

### “Clem”

“No matter in what calling a man finds himself,” said Martin Clement two years ago, “discipline is the one thing that brings him the greatest possible contentment.” It is to discipline himself that he gives up smoking periodically and it is for discipline that he believes in the continuance of daily chapel at Trinity College, from which he graduated in 1901. But his is the soldier’s not the schoolmaster’s respect for discipline; both his father (National Guards) and his grandfather (U.S. Army) were generals. He has no gift at all for the urban gulf with which many businessmen conceal their thoughts: he is both unreticent and succinct. On the railroad he is known as a man whose brain works so much faster than other men’s that his chronograph is one of profound impatience with the world’s inefficiency. For subordinates unlearn some of their facts, a session with Clem is no fun. The only sublety of which he is suspected is deliberately creating arguments as a means of smoking out error. But once he has made up his mind on any point, his decision becomes System policy through orders, not argument.

When he named him as his successor, General Atterbury called Clem “unquestionably the ablest railroad executive in the United States.” The same description had once been applied to the General. But as President the General’s attention was divided between Republican politics, the electrification program, and consolidation maneuvers such as the formation of Pennroad Corp. Thus Clem has really been running the railroad since 1925, when he became Operating Vice President. To date he has remained an operating man. His first move as President was to let it be known that the railroad was no longer the right arm of Pennsylvania’s G.O.P. His own Republicanism (though intense) remains a personal affair. Clem likes railroad men better than politicians as well. He belongs to the Union League Club, where the General used to lunch with Bill Vare, but he never goes there. He prefers the luncheons in the officers’ dining room in the Broad Street Station Building, where he can look down a double row of his Vice Presidents, most of whom are large, physically strong, and forthright men like himself.

Consolidation is at present a dead issue because the large systems have no money for the acquisition of the small. Clem does not look forward to its immediate revival. His own operating skill is built on an intimate knowledge of the most obscure parts of the Pennsylvania System; and he is skeptical of the advantages of owning roads you do not know intimately and operate directly. Thus the Pennsylvania’s future consolidation policy will probably be more cautious than it was under Atterbury. Though no less individualistic. Counting on “the common sense of the American people to prevent public ownership of railroads,” Clem will not omit to do whatever seems necessary to keep his dominant system of the East.

TRAFFIC: WALTER S. FRANKLIN

road men sleep the least. And the faster the flood recedes the less they sleep. For water destroys the artificial earth bed of tracks: the riprap and slag and cinders and ballast and other porous refuse known as fill. At Barree between Harrisburg and Altoona the swollen Juniata first engulfed and then bored a hole under four main tracks to a depth of thirty feet. By dawn of the nineteenth a full hundred feet of all four tracks were hanging unbroken in mid-air like lengths of slack wire, the ties still clinging to them like naked ribs. Carloads of ballast and slag that had been edging and pausing all night from Harrisburg were standing at the washout’s brink by dawn and train-loads of laborers swarmed out of coaches from Marysville, where five hours before they had been a queue at a foreman’s elbow. Out of the hoppers poured the ballast (nine
ty cents the cubic yard) until the twenty-five feet of water that swallowed it became fifteen feet and ten feet and five feet and by evening the carpenters could set the first piling while a track crane with pig iron in its tail strained at the sagging rails. Meanwhile the wreck train tore down the menacing signal bridge and more laborers came up and electricians rigged two miles of lighting on matchboards nailed to the ties and the foremen stuck flares in the soaked earth. The carpenters built a truss of timber torn from a coal trestle back at Altoona and then the hoppers poured more ballast and the laborers shoveled more slag until you could edge the crane forward another fifteen feet and it was the carpenters’ turn again. The first shift of laborers flopped to sleep on the flattened coach seats after twenty-four hours of continuous work but the officers refused to be called for fear of not witnessing the plugging of the last cubic

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Supreme Court
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martial law; hence the deaf man’s friends were told they could have no recourse to the civil courts for damage. The particular University of Pennsylvania law professor who had been assigned to discuss the case in the school law journal was too busy to do it and he turned it over to Roberts. After delving through records in the unfamiliar branch of the criminal law, Roberts finally reached the conclusion that the shooting case should come within the jurisdiction of the civil courts. Although the state Supreme Court ruled otherwise, Philadelphia’s District Attorney, John Cromwell Bell, who happened by chance to pick up a stray copy of the law journal, was so impressed by Roberts’s reasoning that he said: "I want that man in my office as an assistant.”

"Not on your life," said Iz Durham, boss of the city Republican machine, "this Roberts is a reformer, a goo-goo. He has stumped for the reform candidate Bell persisted. And Roberts got the job.

ROBERTS owed his selection as Teapot Dome prosecutor largely to the combined influence of Senator George Wharton Pepper and Harlan Stone, who recommended him to Coolidge. The trust was not misplaced, for the ambitious, obscure Philadelphia soon proved to be more than a match for the wily Frank J. Hogan, who was chief counsel for the Doheny forces. When the dust had settled, the government released the Doheny reserve oil lands at Teapot Dome and Elk Hills, and Messrs. Edward L. Doheny and Harry F. Sinclair were out in the cold. But in the criminal cases arising from the civil cases Roberts and his colleague Atlee Pomerene were not so successful. They managed to convict Secretary of the Interior Albert B. Fall of accept- ing a bribe of $50,000 from Doheny in return for oil-land leasing, but Doheny was acquitted of the bribe to Fall. Sinclair also was acquitted but served a term for contempt of Senate and jury shadowing. In tracking down the source of Fall’s newly-evolved affluence, Roberts did some fine detective work. He followed the trail of the mysterious Continental Trading Co. all over the U.S. and uncovered the means by which Fall got his profits in Liberty Bonds, dug up some musty old precedents that permitted the introduction of the bonds as evidence before the court, and managed in a short and sober speech to convince the jury of Fall’s guilt.

Teapot Dome made Roberts a national figure. And because of his vigorous work as government prosecutor, Senate liberals did not raise the issue of his directorships in the Bell Telephone Co. of Pennsylvania, the Equitable Life Assurance Society, and other big business concerns when Hoover nominated him for the bench. They did not raise the issue of his work for the Philadelphia transit company. Even the Senate Dries finally waived Roberts’s anti-Eighteenth Amendment utterances, and he was confirmed for the Court without a dissenting vote. Some of his friends wish now that they had been more pernickety about the confirmation. For they suspect Roberts of being a Tory at heart. Whether he would have followed his former law partner, W. W. Montgomery Jr., into the American Liberty League had he remained in the private practice that was netting him $50,000 a year after the infamous Teapot Dome reputation is a question that may be left to the amusement of law-school psychoanalysts, who enjoy speculating on what Roberts would have done if he had been left off, breaking his left arm, his colleague Van Danderer waxed a little scornful about eastern nags. But he said nothing about Roberts as a farmer, open spaces who didn’t like the Roberts AAA optimism, have, however, pointed derisively to the reported fact that the Justice walks out in plumes of blue-honed crows. They might be interested to know that the plus fours are disreputable and khaki.

Pennsylvania Railroad
(Continued from page 77)

foot that would put a waiting trainload of food into marooned Pittsburgh. Which happened. The railroads were open on Sunday morning and by Sunday night the general superintendent had taken the telephone out of his car and was on his way back to Harrisburg to nerve up the dispatchers and set freight trains moving in convoys of four to a block and train-ordered the passenger trains through normally mandatory stop sig- nals. Barre was just one crucial washout of some 250 miles on the system. It swallowed 1,000 carloads of fill but the system swallowed 40,000. The derailments and the lost freight and the cost of central and West Shore and B. & O. tracks and the thousands of men and the tons of slag and the four derricks with steel balls smashing debris at the forty-eight archives of Rockville Bridge over the choked Susque- hanna and the barber’s hair driers that restored soaked signal relays to emergency use and the flooded engine houses and the hotel bills of marooned passengers and the cars of coal hurriedly scuttled to buttress embankments and a thousand other extra items that week came to about $7,000,000.

The larger strategy

DURING floods and storms and all emer- gencies, Mr. Deasy is in just as active charge as the most perspiring foreman; if he sleeps at all, it is in his office. But running a railroad is not all emergencies. Mr. Deasy’s calmer energies are applied to the job of keeping the normal service adjusted to the demands upon it, and its expenses to the revenues. When depression hit the Pennsylvania, Messrs. Clement and Deasy counterattacked at once. They lopped no less than $288,000,000 from the annual operating expenses in four years. The first and largest target was labor: the Pennsylvania paid $350,000,000 to 180,000 men in 1925 and $157,000,000 to 110,000 men in 1926. At the same time the money spent on fuel, rails, office supplies, lumber, food, and the 73,000 other items (more than you will find in Sears, Roebuck catalogue) that the Pennsyl- vania buys every year was slashed by two- thirds to save another $100,000,000. Through- out the System the battle raged, bloody for many and harrowing for all. Every other track laborer was furloughed, traffic executives had their titles shot off along with large frac- tions of their pay; General Atterbury’s salary was cut from $160,000 to $60,000. Mr. Clement Deasy known for his personal friendship saving a million dollars’ worth of nickels; and by such sallies as reducing the size of excursion throwaways and removing the paper towels from every office lavabo, he did. And as a result the operating ratio in 1933 reached an all-time low.

This was, however, just one spectacular engagement in the long-range campaign that the Pennsylvania’s operating chiefs had been waging for some ten years. That they won so decisive a victory was due not only to their own sheer physical in hand-to-hand combat but also to the years of slow and tireless maneuvering that preceded the battle. The Pennsylvania’s operating ratio had been declining steadily from 84.7 in 1912 to 72.8 in 1919. There lay the real war: a war of attrition.

THE three largest items in a railroad operat- ing budget—accounting for over 85 per cent of the direct cost of running the Pennsyl- vania—are transportation expense, main- tenance of equipment, and maintenance of ways and structures. Maintenance of ways and structures is the broadest kind of item you can take or leave alone (provided you do not leave it alone too long) and for that reason it is budgeted as a fairly constant percentage of revenues. But maintenance and transportation expense, on an efficient railroad, must of course vary more or less directly with the amount of traffic the railroad carries. Yet between 1921 and 1929, when the ton- nages carried by the Pennsylvania increased from 59,000,000,000 to 53,000,000,000, these two cost items declined not only as percentages of operating revenues, but absolutely, as dollars spent. As in the depression battle, many economies large and small contributed to this improvement. But most important was the applica- tion of what Mr. Deasy calls the Science of Arrangement to the running of the trains them- selves. For it was this that made it possible to funnel nearly 50,000 men; to eliminate scores of signal towers, repair shops, fuel stations, and interlockings; and especially to abandon nine- teen classification yards. It has also resulted in the speeding up of freight service, so that Chi- cago and St. Louis, which in 1921 were fifteen days from the Atlantic Ocean, are now three days away. But the improvement of service to shippers was almost accidental. For the motive

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behind the changes, like the motive behind almost all changes in railroad practice, was not so much to improve the service but, without impairment of service, to save operating expenses.

Axiom I of railroad economics (load as much revenue freight in every car as you can) involves not only a weight-and-space factor but a time factor. If a car takes fifteen days on a journey, it is obviously loaded only one-fifth as profitably as it is when it takes three days, for it carries only one-fifth as much revenue freight in the same time. The 270,000 cars that the Pennsylvania owned in 1921 were so constantly on the road that the management was faced with the necessity of having more. It was to avoid this expenditure that the gradual speed-up began. In 1929, with the same number of cars, they hauled 15,000,000,000 more ton-miles of revenue freight than in 1921. By January of this year the Pennsylvania had reduced its freight cars to 275,000. Currently 30,000 of these are being destroyed and only 10,000 new ones built. Yet the total ton-mile capacity of the railroad is today about 10 per cent greater than it was in 1929.

The deceleration of running times is the only way the Pennsylvania has been able to increase the revenue load of each car. Revenue tons per car-mile (a measure of each car's pay load) have in fact declined. For it is the shipper and not the railroad who decides whether he will load his car to the bunkers or merely to the increasing meager minima that the rate department, in response to the shippers' pressure, has lately been disposed to allow. Grain, which loads to the bunkers, is hard traffic to get since the foreign wheat market collapsed; and automobiles, which take up a mere 10 per cent of the tonnage capacity of a full-loaded boxcar, account for more tonnage every year. And the habit of hand-to-mouth buying that jobbers learned in the depression has decreased the size of almost all miscellaneous shipments—probably for good. As a result the Pennsylvania hauls more dead weight per ton of freight today than it did in 1921. Except for the use of containers (of which more later) this trend has made little impression on the equipment architects of Mr. Deary's department; the new steel boxcars the Pennsylvania is now building are heavier and more capacious than ever. But it has set Traffic Vice President Walter Franklin to working on the possibilities of a new sales unit: something between 100 pounds and a carload, which are at present the only rate-making units that are generally recognized by the Interstate Commerce Commission.

Axiom II of railroad economics (put as many cars in one train as you can) has been applied to increase the average length of Pennsylvania freight trains from forty-one cars (1921) to fifty-six last year. This was accomplished chiefly through a steady increase in locomotive tractive power. In the last ten years the Pennsylvania has scrapped more than 5,000 locomotives—a net decrease in units of 31.5 per cent. Yet the aggregate tractive power of the System has declined only 18.8 per cent. Three hundred new Mountains (4-8-2— for freight) and one hundred new Pacifics (4-6-2— for passengers) have helped to bring the average up, as have 100 new electric locomotives.* Today a full freight train on the Pennsylvania is 125 cars. But a 125-car train is discreet only when equipped with AB air brakes, which were perfected only three years ago and which have as yet been built into only 19,000 Pennsylvania cars. So neatly does the AB valve system control each car that all the brakes on a mile-long train can be set or released from the engine within eight seconds. But it will probably be 1945 before all Pennsylvania freight trains can be of this length.

Axiom III (run as few trains as you can) was the most shamefully neglected of the three axioms until efficiency began its inroads on the Pennsylvania, and its application has not only saved more money than Axioms I and II but has to some extent made their application possible. A train, in the statistical sense, is a locomotive pulling one or a hundred cars along the track. If you remove the locomotive (to change power) or the cars (to rearrange or transfer them) you have killed a train. Axiom III is therefore another way of saying run each train as far as you can. Until 1923 Pennsylvania freight trains did not run on schedules. They were dispatched when the yardmaster had enough cars to make up what he considered a full movement; and he sent them out with a view not to getting to their destination but to getting them into the next division, where he could forget all about them. This traffic technique resulted in

*The Whitley system of classifying all locomotives is based on the number and arrangement of their wheels. 4-6-2 means that these Pacifics have four leading— or truck—wheels (just behind the coupler), six driving wheels, and two trailing wheels (behind the drivers). The Mountains have one more pair of drivers than the Pacifies.

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How to get the business

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Harvard man of immense height and presence who is Vice President in Charge of Traffic. The Pennsylvania's revenues were $353,000,000 last year. Of this amount $358,000,000, or 53 per cent, came from freight: $77,000,000, or 20 per cent, from passengers; and the balance from mail, express, and incidentals. Furthermore, of the $358,000,000 gross freight revenue, $110,000,000 came from carrying the products of mines, and $72,000,000 of this from bituminous coal. The next most important group of shipments was manufactured—$108,000,000, of which the iron and steel companies (who also bought a very large share of the coal) delivered $50,000,000. Agriculture delivered $64,000,000 revenue, animals dead and alive brought $12,000,000, and forest products brought $7,000,000. All less-than-carload traffic brought $7,000,000, or a little over 9 per cent.

This $358,000,000 represents 190,000,000 tons of revenue freight. Some 53 per cent of these tons, accounting for 56 per cent of the revenue, originated at points on the Pennsylvania System: the balance came to the Pennsylvania via connecting lines. The B. & O., on whose lines is almost as much coal as on the twice-as-large Pennsylvania, originates 50 per cent of its total tonnage. The New York Central, with few mines but many coal consumers, originates only 45 per cent of its tonnage.

This $288,000,000 was paid to the Pennsylvania by some 35,000 different firms. To solicit them Mr. Franklin maintains a staff of 350 men, about ninety of whom are stationed at off-line points where 44 per cent of the tonnage originates. The solicitors have a regular call list of steady carload shippers, which has been pruned down to 7,500 names. But to Mr. Franklin, even a list of 7,500 names is a little paltry. For the fact of commanding importance to him is that his 200 largest shippers produce over 60 per cent of all his carloads and pay a freight bill of nearly $65,000,000 a year.

TTT is apparent that so large a customer as U.S. Steel or Bethlehem Steel must be a crushing responsibility for the transportation salesman who has to keep him happy, be the salesman Mr. Franklin himself. Both shippers and railroads sensed long ago the incomparability of a personal string around so huge a bundle, and the relationship is therefore secured by the tougher ties of reciprocal buying. Every order for new steel rails placed by the Pennsylvania has for twelve years conformed to a rigid formula: 50 per cent U.S. Steel, 44 per cent Bethlehem, 6 per cent Inland. In its coal purchases (10,000,000 tons last year) the Pennsylvania distributes its orders with mathematical precision among some 2000 operators every year; and it never pays them less than a price based on economical operation at normal mine capacity. Which is why the Pennsylvania and other coal roads pay more for coal when its price is distanced than roads that are hundreds of miles from a [Continued from page 217]
Pennsylvania Railroad

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mine. The purchasing department (under Vice President Charles D. Young) similarly nourishes any industries on the System that are sources of present or future traffic. Mr. Young never buys anything off line if he can as advantageously buy it on, and when he discusses price he is just as chary of being a chiseler as of being a dupe. Between his department and the Industrial Development Bureau of Mr. Franklin's traffic department there is an intimate relationship. For the Pennsylvania and the industries on its lines ("our industries," the Pennsylvania calls them) are not so much buyers and sellers as allies confronting together the rest of the business world.

Since all railroads observe the same rules, there is a tendency for shippers who are served by more than one railroad to allocate their business in frozen percentages among the competing railroads—percentages that each road knows are directly related to its own purchasing power. A shipper like International Cement is no less careful to give 60 per cent of the traffic from its Pennsylvania mill to the Pennsylvania Railroad than the Pennsylvania is to buy a strict percentage of its cement from International. Such situations of course make the job of freight solicitor almost too simple to be dignified; he becomes less a sales man than a watchdog of the status quo. But the freight solicitor does more than pass the cigars; he sees that his shipper gets cars spaced and traced and claims settled promptly, and he is constantly badgering him for any marginal or special traffic he may have. Aggressive solicitation (in which all the eastern trunk lines engage) has produced mild shifts of a few tenths of one per cent in the total shippings of each railroad over the past ten years. But in the sense that it exists among food or automobile manufacturers, vigorous and effective competition is no longer possible among railroads. For the strongest competitive weapon—price—is one that neither the solicitor nor Mr. Franklin himself is allowed to use.

The reason the freight solicitor is not allowed to talk price is not because the Interstate Commerce Commission controls rates. Every railroad retains the theoretical power to make any rate it wants, provided the Commission does not find it to be discriminatory, unjust, or unreasonable. It is true that the Commission has brought the railroads up short before many an avenue to traffic down which their own economic laws would have led them. But it is the railroads themselves that have outlawed the rate as an instrument of competitive policy.

To avoid dizziness when glancing at the U.S. railroad rate structure you must free yourself of any preconception that railroad rates are in any way proportional to distance or the cost of service. Since a railroad, to pay the overhead charges that are about half its total costs, must get huge volume or die, and since the price of transportation itself determines the volume of commerce in many commodities, it has never occurred to any railroad to make all its rates on the same formula. Instead the railroad treats each commodity presented as a special case, like a lawyer in fixing his fees, and makes such a price for each shipment as will bring the railroad, in the railroad's best judgment, the most revenue from all traffic.

This practice was sanctioned by Economist Arthur Twining Hadley in 1888, under the unfortunate phrase of "charging what the traffic will bear." Although the Commission recognizes many other factors in determining whether a given rate is just and reasonable, the final test of any rate is still its ability to move the most remunerative quantity of the commodity to which it applies. There are about 5,000 different commodities that move by rail and about 35,000 towns between which they may so move. It is perhaps a credit to the simplifying genius of the railroads, therefore, that the number of separate effective tariffs on file with the I.C.C. instead of being a mere 300,000 is not nearer 35,000 raised to the five thousandth power.

Once he has evolved a rate that will move a given commodity (like coal) without destroying the movement of any other commodity (like oil), the rate maker's task has only begun. Other competitive forces at once commence to pull his nebular rate away. Every time Mr. Franklin's men draw up a new tariff from interior points to the seaboard, they are reminded of the market competition between the ports of New York, Philadelphia, and Baltimore, and of the fact that Philadelphia ship owners are something less than satisfied with the ten-year-old differentials making Baltimore the cheapest and New York the costliest port for such traffic as Chicago wheat to pass through on its way to Liverpool, Philadelphia, being in the middle, pictures itself losing market. (Continued on page 212)
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[Image of a large metal box]

Pennsylvania Railroad

[Continued from page 211]

In unison, to be sure, railroad rates have been slowly but steadily declining. The average tonmile revenue of the Pennsylvania System was 10.65 mills in 1925 and 9.05 mills last year. This reduction has been forced mostly by truck competition, and the Pennsylvania, like all railroads, has regretted it every inch of the way. It is largely because railroad rates are not based on cost that the railroads have been so peculiarly vulnerable to truck competition: the trucks take the high-rate traffic on which the railroads rely to enable them to carry less mobile traffic at low rates. It is also because they are not based on cost that the railroads have a vital stake in keeping rates up. For when truck competition forces the Pennsylvania to reduce the carload rate on petroleum products between Marcus Hook, Pennsylvania, and Salisbury, Maryland, from fifteen and one-half cents to fourteen cents a hundred pounds it is still a remunerative haul to the railroad, but it inevitably means a decline in gross revenue, because the price reduction neither invites nor expects any new business; at the most, it hopes to recover the old business or to prevent its departure.

The theory of railroad rates is that each rate is in itself the optimum rate for that commodity; a price reduction can never bring increased consumption—merely less gross. One of the most painful rates is that of President and Comptroller Frank J. Fell's tireless figure factory is a calculation of what the Pennsylvania's revenues in each recent year would have been if the 1921 tonmile rate had been maintained. It is difficult to conceive of another industry that would see any sense in the preparation of such figures. But they have at least a moral value to the Pennsylvania because gross revenues from all traffic are a big railroad's only measure of how it is doing. On a railroad you try to keep your prices up not simply because you have a gross-Magnon monopoly view of things but because it is your economic duty to charge each article of commerce as much as it can pay for your service, in order that all articles of commerce may circulate as freely as possible.

With no single road nor all the roads together daring to attack with the backfiring weapon of rates in their struggle for more freight revenues, the railroads have done what they could with
service. Next to faster schedules perhaps the most fundamental change in service to shippers during the last fifty years has been store-door collection and delivery of less-than-carload freight, and in this the Pennsylvania has led the eastern lines. The pioneer collection-and-delivery tariff that the Pennsylvania filed in 1913 (the B. & O. and Erie following suit) was credited by Mr. Franklin with a 9 per cent increase in his less-than-carload business last year. This spring he drafted some improvements on this tariff, which would make collection and delivery a regular part of L.C.L. service anywhere on the System at no extra charge. He hoped thus to give his own contract truckers all the L.C.L. drayage business on the railroad; for even customers who own their own trucks would have preferred the free collection and delivery offered by Mr. Franklin.

This would have enabled Mr. Deasy to concentrate all his L.C.L. loadings at a single station in all cities and close some twenty receiving offices in Philadelphia alone. But the New York Central indirectly controls a forwarding company (Universal Carloading), which will lose one of its strongest selling points when the railroads offer universal free collection and delivery of package freight. The New York Central therefore held out for a rebate of five cents per hundred pounds for all customers who do not choose to take advantage of the free service. On April 1, when tariffs based on this compromise were scheduled to go into effect on all trunk lines, the Interstate Commerce Commission suspended them until the vigorous complaints of independent trucking interests have been weighed.

If the suspended tariffs are then allowed to become effective, Mr. Deasy will still have to keep his scattered freight stations open for the benefit of shippers who, using their own trucks to get the rebate, will haul their traffic to the nearest freight station. If Mr. Deasy closed all but one of his freight stations in each city, the nearest freight station would too often turn out to be the New York Central's or the B. & O.'s.

Less-than-carload traffic is high-rate traffic; it is 2 per cent of the Pennsylvania's freight tonnage and 914 per cent of its freight revenue. But it is still a drop in Mr. Franklin's revenue bucket. There is one commodity that means even more to him than bituminous coal. That is the traveler.

The Pennsylvania received $77,000,000 of passenger revenues last year (it was 20 per cent of all the money spent by Americans for railroad tickets), and of this the Long Island contributed $17,000,000. The Long Island collects more tickets than all the rest of the Pennsylvania System: it carried 8,000,000 of the System's 140,000,000 passengers last year. But the Long Island is almost exclusively a commuter railroad and is outside the main stream of Mr. Franklin's thoughts when he ponders the broad questions of the passenger business.

Two cents a mile

WHEN the Interstate Commerce Commission in a five-to-four decision last February ordered the basic passenger fare throughout the country reduced from 36 cents a mile to two cents

[Continued on page 215]
Pennsylvania Railroad

[Continued from page 213]

There’s a Gold-mine at Your Feet

In the hearts and minds of men who work for you there is a latent enthusiasm—a will-to-do-things that is the most priceless asset of any organization.

Ordinary routine of work does not get below the surface to the golden vein beneath. Some definite urge, some special incentive is needed.

GIVE THEM A CONTEST

Let your men compete for some prize that is a symbol more valuable than money in arousing their ambition. Lift them out of the dullness of the daily round. For such friendly competition brings results that regular ways and means never achieve.

WE PLAN SUCH CONTESTS

While our work primarily is the selling of merchandise—diamond jewelry, watches, silverware, radios, leather goods, electrical appliances and other articles—we have a Promotion Department that creates, plans and arranges all details for successful contests and competitions. Many national companies have used our service.

If you would like to stimulate your men, to inspire them, and make their new enthusiasm bring prizes to them and profits to you, consult our Promotion Department.

L. & C. MAYER S CO., INC.

IMPORTERS • MANUFACTURERS • DISTRIBUTORS

Merchandise service to industry • (Established 1912)

545 Fifth Avenue, New York
Land Title Building, Philadelphia, Pa.

In Europe: Amsterdam • Antwerp

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A LITTLE MONEY
but all their own

- Few of us realize what a great difference even five or ten dollars a week can make in the lives of the aged.
- Many they can call their very own can mean more to a dependent father or mother than the most lavish support which doesn't include this important item.
- A small investment in a John Hancock Annuity, giving them an income as long as they live, can change their whole outlook on life.
- Let us send you our booklet describing John Hancock retirement plans.

John Hancock
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

OUR WACO
Is Saving Us Many Times Its Cost

"It brings our executives into closer touch with our many plants. Better, more efficient management is the result."

President GOODALL COMPANY
Makers of Palm Beach Suits

Ownership of an airplane has become recognized as an asset to any organization doing business over a wide territory. The problem becomes one of selecting the right airplane for your needs.

The economy and comfort of the 1936 Waco Cabin make them outstandingly practical for business travel. Priced as low as $4995, they may be purchased on convenient terms. Their expense of ownership and operation, as shown by the carefully kept records of organizations maintaining Wacos for business transportation, is extremely low in relation to the value of the service they deliver. The comfort and beauty of their 4-to-5 place interiors, the ease and reliability of their flight, and the accessibility of the more than 100 Waco sales and service representatives combine to keep Waco the leader in aircraft registration.

A nearby dealer will gladly give you a convincing demonstration of Waco's superiority, and show you how a Waco will prove a profitable investment for your organization.

THE WACO AIRCRAFT COMPANY - TROY, O H I O

Pennsylvania Railroad

[Continued from page 215]

rate per mile is too constricting. An average section of the extra-fare Broadway Limited, which carries eight people to a car and earns about $2 a mile, makes just as welcome contributions to the Pennsylvania's net as an excursion, which packs seventy to a car at a cent a mile and earns about $6 a mile. But there is no ground of comparison between them. Every passenger movement on the railroad, in Mr. Clement's view, is sui generis, and has an optimum rate (to be discovered by experiment) just as every freight movement has an optimum rate. Mr. Clement believes that a sliding mileage scale of rates and a diversification of special interest rates would point the trend of his passenger revenues permanently upward again. A petition based upon these views and supported by the New York Central and the New Haven is now going to the Commission. If the Commission accepts it, it will mean that Dan Willard's two-cent fare (otherwise effective June 1) will lose again.

The Pennsylvania attributes its slight increases in passenger revenue since 1933 to the improved service: notably the electrification program and the air conditioning of all through trains. Coach equipment has not been so thoroughly modernized as it has been on the B. & O., but Stylist Raymond Loewy, consultant to Mr. Deasy, has designed (and Altoona is executing) some new interiors. The new streamlined steam locomotive that went into service last month was also an Altoona execution of a Loewy idea. But neither this novelty nor the new coaches can be called pioneering in equipment in the sense that the Union Pacific's Kansas Streamliner or the Burlington's Zephyr or the New Haven's Comet are pioneer trains. The age of light equipment has not yet arrived on the Pennsylvania. Their streamlined locomotive, a fifteen-year-old Pacific with a new shell, weighs 29,000 pounds more than it would if it weren't streamlined.

T H E Federal Coordinator of Transportation, Joseph B. Eastman, has during his three years in office published studies of the freight and passenger business that point to the necessity for a lighter equipment. In freight service his data show that the decentralization of manufacturing and industry's insistence on low inventories will continue to shorten the average haul of freight and lessen the size of each individual shipment. The report envisions a freight service in which coal and other low-grade freight will move in solid trainloads as at present, but fast freight will be faster still, being hauled in small, light trains of alloy containers and cars by low-horsepower steam or Diesel. Smaller trains, cheaper trains, more trains move in this vision direct from shipper to consignee without yarding or consolidation, like so many cash cans in a pneumatic tube. It is plain that this concept is directly at odds with the traditional economics of long train railroading. Mr. Franklin, who is working on a half- and quarter-carload rate structure (to move in containers) because the motor truck has popularized such units, does not make any application of this trend to his largest shippers, and in fact whenever a carload rate is under pressure his effort is to increase the carload minimum requirement pari passu with every surrender of pennies per hundred dollars, so that his earnings per carload may remain the same. And Mr. Deasy, as stated above, is building larger and heavier cars all the time and looks for still longer trains. Mr. Deasy believes in the future of light equipment because it increases the ratio of revenue tons to gross tons hauled; not because it can make possible shorter and more frequent trains, and not until it has been demonstrated beyond doubt that a 30,000-pound light-twin boxcar will average as much loading and standing as much punishment as a 50,000-pound heavy-twin boxcar. For as the load per car is the cornerstone of railroad economics, so is strength the first requirement of its practice. You do not buy untested ordnance when you are at war; especially if your skillful use of tested ordnance is enabling you to wage the war successfully. And Mr. Deasy's practical victories to date do make the question of methods seem a little academic. When Mr. Deasy goes over the line, from the bleak and wind-swept plain by Newark Bay (where scurvy huddles of floated cars from Boston land for their first taste of Pennsylvania marshaling) to the smoky western outpost at East St. Louis, the friendly wave no railroad man knows how to omit is always answered by the track foreman or the flagman's vanishing lantern because both men feel a sufficient victory in having run the trains another day.

[Pennsylvania Railroad's financial and labor policies and its electrification program will be considered in Fortune for June.]