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# Tricky Tonnage

by

**Malcolm Jameson**

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WHEN YOU'VE lived across the fence from an amateur inventor, you come to expect anything. When the wind was right we used to get some of the awfulest chemical stinks from the Nicklheim barn, and we got so used to hearing explosions that they didn't bother us any more than automobile backfires. We just took it for granted when we'd see Elmer, the boy next door, walking around with his eyebrows singed off and the rest of him wrapped up in bandages.

When Elmer was a little tad, he was a great enthusiast for scientific fiction. You hardly ever saw him unless he was lugging some Jules Vernian opus around, and he ate up all he read with dead earnestness. With that yen for science it might have been expected that he would shine at school, but it did not work out that way. He wouldn't go along in the rut laid out for the run-of-the-mine student. The physics prof finally had him kicked out for some crazy stunt he pulled with the school's equipment. Elmer hooked it all together in a very unorthodox way, and the resulting fireworks was quite a show.

Being barred from school did not faze Elmer. He rigged up his own lab in the barn, buying the stuff from mail-order houses with money he made doing odd jobs. Some of the people in the town thought the boy might go places; most simply thought he was a nut. I belonged to the former group, and sometimes

helped the kid with small loans. Not many of his inventions panned out, but he did sell one gadget useful in television to a big company. In a way it proved to be a bad thing he did. The company bought the idea outright and paid promptly, but afterwards for reasons of its own, it suppressed the invention--an act that irked Elmer exceedingly. It prejudiced him violently against big corporations as such and the whole patent set-up in general. He swore that after that he, would keep all his discoveries secret.

About that time his father died, and it looked as if Elmer had finished with his scientific dabbling phase. Overnight he seemed to mature, and after that he was seldom seen pottering around his barn. He was busy about town, carrying on the little one-horse trucking business bequeathed him by the old man. His truck was one of those vintage rattletraps that appear to be always threatening to make the legend of the one-hoss shay come true, but Elmer was a fair mechanic and somehow kept the old crate going. Not only that, but to the astonishment of the citizenry, he seemed to be making money at it, and that at a time when rate competition was keen and gas expensive and hard to get. I was beginning to think we had witnessed the end of a budding scientist and the birth of an up and coming young business man. It was Elmer himself who disabused me of that notion.

One morning he stopped his truck at my gate and came up onto the porch. He pulled out a wad of bills and peeled off a couple of twenties.

"Thanks," he said. "It was a big help, but I'm O.K. now."

"Oh, that's all right," I said. "There was no hurry about paying it back. But I'm glad to see you're doing well in the hauling game. It may not be as distinguished as getting to be known as a big-shot scientist, but at least you eat."

He gave me a funny look and sort of smiled.

"Hauling game, huh?" he sniffed. "I'd never thought of it that way. I don't cart stuff around for the fun of it, or the money either. That's incidental. What I'm doing is testing out a theory I thought up."

"What's that one, Elmer?" I asked. I had heard a lot of his theories, first and last, and seen most of them go flop. Elmer had a very screwy approach to the mysteries of nature.

"It's about gravity. I've found out what it is, which is more than anybody else since Newton has done. It's really very simple once you know what makes it."

"Yes," I agreed. "That is what Einstein says, except that he hasn't finished his universal field formula. So you've beat him to it?"

"Yes. I've been running my truck by gravity for the last three months."

That didn't quite make sense to me. The country road about was hilly and a lot of coasting was possible. But still a vehicle couldn't coast up hill. Elmer was studying me uncertainly, and I realized he wanted to talk to somebody, but he was always so cagy about his projects that I hesitated to come right out and ask.

"I've discovered something big," he said, soberly. "So big I don't know what to do with it. I'd like to show it to somebody, only--"

"Only what?"

"Oh, a lot of reasons. I don't mind being laughed at, but I'd like to keep this secret for awhile. If the other truckers found out how I'm doing what I do, they might gang up on me, smash the truck, and all that. Then again there's no telling what somebody else might do with my idea if they got hold of it before all the

theory is worked out."

"I can keep a secret," I told him.

"All right," he said. "Come along and I'll show you something."

I got in the truck with him. He stepped on the starter and the cranky old engine finally got going, though I thought it would shake us to pieces before it made up its mind whether to run or not. Then we lurched off down the road, rattling and banging like a string of cans tied to a mongrel's tail.

"Where does the gravity come in?" I asked.

"I don't use it in town," he said. "People might get wise to me."

We went on down to the oil company's bulk station. It had been raining off and on all week and there was a good deal of mud, but Elmer skirted the worst puddles and we got up to the loading platform all right. It was there I got my first surprise. A couple of huskies started loading up that truck, and when they were through I would have bet my last simoleon Elmer would not get two miles with it. There were six big barrels of grease, weighing four hundred pounds each, a half dozen drums of oil, and some package goods. The truck kept creaking and groaning, and by the time the last piece was on, its springs were mashed out flat as pancakes. It was bad enough to have that overload, but the stuff was for Peavy's store out at Breedville-forty miles away over as sketchy a bit of so-called highway as can be found anywhere in America.

"You'll never get over Five Mile Hill with that," I warned Elmer, but he just grinned and pocketed the invoices. The oil company agent was looking on in a kind of puzzled wonder. He had used Elmer's delivery service before, but it was clear that he didn't believe his eyes. Meanwhile Elmer got the motor going and we backed out of the yard. There was a good deal of bucking and backfiring and shimmying, but pretty soon we were rolling toward the edge of town.

Just beyond the last house the Breedville road turns sharp to the right into some trees, and Elmer stopped at a secluded place where there was an outcropping of bedrock alongside the road proper. He killed the engine and got a cable-like affair out of his tool box.

"The first step," he said, "is to tighten the load."

He hooked one end of the cable against the side of a grease barrel and the other he led to the bare bedrock and attached it there. The cable terminated in what appeared to be rubber-suction cups. It looked as if it were made of braided asbestos rope, threaded with copper wire, and near one end it spread out in a flattened place like the hood of a cobra. There was a small dial and some buttons set in that. Elmer set the dial and punched a button. Instantly there was a popping sound as the truck bed stirred, and I saw that it jumped up about a quarter or half an inch.

"Now heft that barrel," said Elmer.

I did. If there hadn't been another one right behind me, I would have gone overboard backward. I got hold of the top of the cask and gave it a tug, not dreaming I could budge four hundred pounds of heavy grease.

But it came away with about the same resistance that an empty cardboard carton would have had.

"What makes weight," explained Elmer, "is gravitons. All molecular matter contains them in various degree. Up to now nobody knew how to extract them. You could only manipulate weight by moving the matter itself. I simply drain most of the gravitons off into the bedrock where it will be out of the way. It's

easy because there is a gravitic gradient in that direction."

As an explanation it was a long way from being satisfactory. But there was the barrel, plainly stencilled with its gross weight, and it was now practically weightless. The weight had left as abruptly as a short-circuited electric charge. Moreover, Elmer was shifting his cable from one drum to another, and as he touched each one the truck rose another notch. By the time he was through it rode as high as if there was no load at all.

"I'll use the last one of these drums for power," said Elmer, coiling up his cable and putting it away. Then I saw that he was making a short jumper connection between it and another cable running down under the cab to the hood. He lifted that up and showed me an attachment on the shaft behind the motor. It was a bulbous affair of metal and there were two leads to it. One was the connection to the drum, the other was a short piece of cable that dangled to the ground.

"I call that my Kineticizer," said Elmer. "It is really a gravity motor. It works on exactly the same principle as a water turbine except that it doesn't require the actual presence of the water. The upper cable has more gravitic resistance than the one I use to dump the load. It feeds a slow stream of gravitons to the upper vanes of a steel rotor. They become heavy and start to fall, exerting torque. At the bottom they wipe the ground cable and the moving gravitons simply waste away into the road. Four hundred pounds falling four feet gives a lot of power-especially when you use it all. See?"

Did I? I don't know. It sounded plausible, and anyway Elmer banged down the hood and we climbed back into the cab. That time we started off like a zephyr. There was smooth, silent, resistless power, and the truck being lightened of its load, leaped like a jack rabbit. The gasoline motor was idle. The only noise was the rattling of the fenders and the swish of the air. Breedville began to look more attainable.

After we straightened out on the road, Elmer began to tell me about gravities.

"It was Ebrehaft's work with magnetics that got me to thinking about it. Since he was already doing magnetalysis I didn't bother to go along that line. What interested me was the evident kinship on the one hand between electric and magnetic phenomena in general, and between the strong magnetism of electric fields and iron and the relatively weak magnetism of all other substances."

I kept on listening. Elmer's whole theory of gravities was pretty involved, and in some spots downright screwy. But on the whole it hung together, and there I was riding along on a stream of moving gravitons to prove it. According to the Elmerian doctrine, in the beginning there was chaos and all matter was highly magnetic. It therefore tended to coalesce into nebulae, and thence into stars.

There the fierce pressures and temperatures tended to strip the basic matter of its more volatile outer shells and hurl them outward in the form of radiant energy. Atomic stresses yielded enormous quantities of light and heat and great streams of magnetons and electrons. In the end there is only ash--the cold inert rocks of the planetary bodies. With the exception of the ferric metals none of that ash retains more than a bare fragment of its original magnetic power. Yet even rock when in massive concentration has strong attractive power. The earth is such a concentration, and its pull on the apple was what woke Newton up.

From that concept Elmer dug into the apple itself and into the atoms that compose it. Mass, he claimed, in so far as what we call weight is concerned, is simply a matter of gravitonic coefficient, a graviton being the lowest unit--one more aspect of the atom. It is the nucleus of a magneton, what is left after the outer shells have been stripped away. The graviton is utterly inert and heretofore locked inseparably in the atoms of the substance to which it originally belonged. If only they could be induced to move, their departure would rob the parent substance of nothing except weight, and by moving pure essence of weight potential energy could be turned into kinetic with the minimum of loss.

"It was finding a suitable conductor that stumped me longest," Elmer confessed, "and I'm not telling yet what that is. But as soon as I found it I built this motor. You see for yourself how beautifully it works."

I did, and I saw a myriad of rosy dreams as well. We took Five Mile Hill like a breeze, almost floating over, thanks not only to the silent drive but to the weightlessness of the cargo. I thought of all the massive mountain ranges just sitting in their grandeur with billions and billions of foot-tons of locked-up energy awaiting release. I could envisage hundreds of kineticizer plants around their slopes sending out an abundance of free power. What it did not occur to me to think of was what would happen when those mountains eventually became weightless. What worried me most just then was, how the other properties of materials would be affected with alteration of its natural weight.

"Oh, not much," said Elmer. "The relative weights of duraluminum, steel and lead have nothing whatever to do with their tensile strength. I drained off most of the weight of a pan of mercury and tested it. I found that it got a lot, more viscous when it was light, a characteristic that is overcome by its normal heaviness. But otherwise it was still mercury. There is an anvil in my barn that weighs less than a toy balloon. If it wasn't kept clamped to the block it sits on, it would soar and bump against the rafters, but as long as I keep it from doing that I can still hammer iron out on it."

We were nearly to Breedville when it began to rain again. Elmer put up the storm curtains, and I asked him about how Mr. Peavy was going to react at getting barrels of grease that were lighter than whipped cream.

"I'm going to take care of that before we get there," said Elmer.

I found out what he meant when he pulled up under a railroad underpass about a mile this side of Peavy's store. He got out and produced his cable again. This time he attached it to the face of one of the concrete abutments that held up the girders carrying the track. One by one he reloaded the barrels by dead weight sucked out of the abutment and let it run into the containers on the truck. Again the truck body settled groaning on its springs.

"I'm working on a way to meter this flow more accurately," said Elmer with a grin. "The last load out here Peavy squawked like everything because the stuff was light. This time I'll give him good measure. Nobody ever kicks at getting more pounds than he paid for."

Well, there it was--Elmer's stunt full cycle. No wonder his gas and tire costs were less than anybody else's in the business, or that he could set out on a long trip with an impossible load. He had only to reduce the load to zero, using part of it for power, and replenish it at the other end of the line.

We went on to Peavy's, using the wheezy gasoline motor again. No one at the store saw anything amiss when we drove up, and though Peavy was careful to roll each box and drum onto the scale, he made no comment when he found them markedly overweight. He probably figured it was only justice from the short-changing he had had on the delivery before, and on which the oil company had been adamant as to adjustment. Elmer then picked up some empty drums and we started back.

The rain was coming down hard by then, and when we got to the underpass there were several inches of water in it. Elmer stopped long enough to draw off a few more hundred pounds of avoirdupois into one of the empty drums so as to have power for the trip home. He said it was the best place along his route to get needed weight in a hurry. We started up, but had not gone more than about a hundred yards when we heard a terrific *swoosh* behind us, and on the heels of it a resounding metallic crash and the scream of shearing metal. The ground shook, and a wave of muddy water swept along the road from behind and passed us, gurgling among the wheel spokes.

"What on earth?" yelled Elmer, and stopped the car.

What was behind us was not pretty to see. The concrete abutment we had just left had slid from its foundation straight across the road until it almost impinged on its opposite mate. What had been the earth fill behind it was a mass of sprawling semi-liquid mud. Sodden by days of rain and heavy with water, the fill had come to act like water behind a dam and simply pushed along the line of least resistance. The now practically weightless retaining wall gave way, since there was only friction to hold it where it should be. The two great black steel girders that it supported lay at an awkward angle half in the pit where the underpass had been, half sticking up into the air.

"Gosh," said Elmer, gazing at the spectacle. "Do you suppose I did that?"

"I'm afraid you did," I said. "Maybe concrete don't need weight for strength, but it has to have something to hold it down."

Well, the damage was done, and Elmer was scared. A train was due soon and something had to be done about it. So we drove on to the first farmhouse that had a phone and sent in word about a washout. After that we went on home, Elmer being pretty chastened.

The days that followed were quite hectic. The more the railroad and public utility commission engineers studied the retaining wall's failure, the more baffled they became. The abutment itself was unmarred in the least degree. There was not a crack in it, and only a few chipped places where the falling girders had knocked corners off. Experts chiseled chunks out of it and took them to dozens of engineering labs. The records of the contracting firm that built it were overhauled. The wall was up to specifications and had been thoroughly inspected at the time of construction. The fragments subjected to strains and stresses reacted as they should, having exactly the tensile and compression strength it should have. The mix was right, the ingredients without flaw. The hitch was that the stuff under examination had about the same weight as an equal volume of balsa wood!

Learned treatises began to appear in the engineering journals under such titles as, "Weight Loss in Mature Concretes," "Extraordinary Deterioration Noted in Failure of Concrete Railway Abutment," and so on. Throughout the whole strange controversy Elmer never peeped, and neither did I. I kept silent for several reasons, and only one of them was the fact that I had given Elmer my pledge not to divulge his invention before he gave the word. Mainly I felt that whatever I might tell them would be received as too ridiculous to be believed. After all, people just don't go around sapping idle weight from stationary objects.

The sequel to the incident has to remain obscure. The very ride that let me into the secret proved also to be the cause of my being excluded from it thereafter. I caught a cold that day, and before long it turned into pneumonia. Complications followed, and there were some months when I was confined to a hospital bed. When I was out again and around, my neighbor Elmer had gone, presumably in search of wider fields.

It is a pity that Elmer's unfortunate experience with his earlier invention soured him on the usual channels of development, for I think what happened to him later was that he got into the hands of unscrupulous promoters. For quite a long time after the collapse of the railroad crossing I heard nothing of Elmer himself or his world-shaking discovery. But little bits of news kept cropping up that indicated to me that while Elmer's secret was being kept, it was not getting rusty from disuse, though he lacked the necessary business imagination ever to put it to its best uses.

There was the phenomenal success of Trans-America Trucking, for example. It was significant to me that the Eastern terminus of its main haul was laid out in the bottom of an abandoned rock quarry and its Pacific end in a deep canyon. I thought I knew where the power came from, especially when an oil salesman told me he had tried hard to get the Trans-American contract. They not only refused to buy from him, but he could not find out what company, if any, was supplying them. I also noted that

Trans-America was continually embroiled in lawsuits arising from discrepancies in weights. I knew from that that Elmer had not yet solved the problem of metering his weight siphons.

There were other straws that pointed to Elmer's fine hand. Highway engineers along the routes traversed chiefly by his trucks discovered after a time that even the dirt roads over which the trucks ran needed little or no binder. The surface soil was found to be incredibly heavy, like powdered lead, and therefore did not dust away under high-speed traffic. In the course of time it became as hard and compact as the floor of a machine shop where iron chips form the soil.

But eventually there was trouble. Disloyal employees must have stolen lengths of Elmer's mysterious graviton conductor, for there was a story told in some glee of a policeman giving chase to a fleeing man who had a big iron safe on his shoulders! The burglar got away, so for a time Elmer's secret was comparatively safe. And then there was the exposure of what was later known as the spud racket.

One of Trans-America's ex-truckmen, being aware that potatoes were sold by the pound, saw opportunity. He absconded with a length of Elmer's cable and set himself up in the potato business. He was modest at first. The spuds he handled were overweight, but not too much too heavy when he resold them. The dietitians in the big institutions were the first to notice something wrong, for they had analysts to interpret the figures. But greed got the best of the gangster truckman. Not content with his initial ten or twenty percent boosts in weight, he poured on the avoirdupois thicker and thicker. The average housewife began to complain that big potatoes required all her strength to lift.

The day the market inspectors raided the man's storehouse the cat was out of the bag. They uncovered an endless stream of potatoes on a conveyor belt that ran by a bin filled with scrap iron. As each spud passed a certain point it was wiped by a wisp of mineral wool, whereupon the belt beneath sagged deeply and spilled the potatoes onto the floor. Cranes scooped them up and carried them to the packing department.

The subsequent prosecution ran into myriad legal difficulties. There was ample precedent for dealing with short weights, but none for artificially added surplus weight. Chemists sought to prove, once they tumbled to the concept of movable gravitons, that the introduction of ferrous gravitons into a food product constituted a willful adulteration. They failed. The composition of the potatoes was no more altered than is that of iron when temporarily magnetized. In the end the case was thrown out of court, much to the anger of some theologians who had also developed an interest in the case.

That there was at once a spate of laws forbidding the alteration of natural weights was inevitable. State after state enacted them, and the Interstate Commerce Commission began an investigation of Trans-America Trucking, damaging admissions having been made by the potato racketeer. It was the collapse of one of the cliffs at the western terminus of that company that was the straw to break the camel's back. Weight shifting became a federal offense with drastic penalties.

Perhaps collapse is a badly chosen word. The cliff disintegrated, but it did not fall. It soared.

It happened late one afternoon shortly after a heavy convoy arrived from the east. Thousands of tons of weight had to be made up, and the power units of the incoming trucks recharged with still more weight. The already lightened cliff yielded up its last pounds, for it had been drawn upon heavily for a long time. Its stone, being loosely stratified, lacked cohesion, so with sound effects rivaling those of the siege of Stalingrad, it fell apart--upward--in a cloud of dust and boulders. The fragments, though stone, weighed virtually nothing, rose like balloons and were soon dispersed by the winds.

Unfortunately the canyon was not far from the most traveled transcontinental air route. Within an hour pilots were reporting seeing what they described as inert bodies floating in the upper air. One of them ran

into a stone no bigger than his fist, but since he was making several hundred miles an hour at the time, it neatly demolished one of his wings. That night two stratoliners were brought down, both riddled with imponderable gravel. The debris while lighter than air, still had some residual weight and unimpaired tensile strength.

Congress intervened. Trans-America's charter was voided and its equipment confiscated and destroyed. Elmer was forbidden to resume business except on orthodox lines. There was no place in the United States for his invention.

That should have been the end of the Theory of Gravitics and its unhappy applications. But it was not. For Elmer had associates by that time who had tasted the luxury of sure and easy profits, and they were not to be denied. Rumor had it that it was his shady partners who took over the financial end and relegated him to his lab again to hunt for other means of utilizing his kineticizer. However that may be, the next stage was several years in incubation. For a time gravitons ceased to be news except in scientific circles where controversies pro and con still raged. People had already begun to forget when Caribbean Power announced itself to the world.

It started operating from a tiny island republic known as Cangrejo Key. Through oversight, or because it was a worthless patch of coral sand frequently swept by hurricanes, mention of it was omitted in the treaty between the United States and Spain at the end of the war of 1998. It was still Spanish until the graviton syndicate bought it from an impoverished Franco for a few millions in real gold. Whereupon the Cangrejo Commonwealth was set up as an independent state and a law to itself.

By then they had one valuable addition to their bag of tricks--Elmer's third great invention. It was a transmitter of beamed radio electric power, and they promptly entered into contracts with large industries in nearby America for the sale of unlimited broadcast power at ridiculously low rates. At first the great maritime powers protested, suspecting what was afoot and fearing the incalculable effects on shipping if Caribbean Power meant to rob the sea of its weight. But the storm subsided when the new republic assured them sea water would not be touched. They pledged themselves to draw only from the potential energy of the island they owned. So the world settled down and forgot its fears. No matter what happened to Cangrejo Key, there was the promise of abundant cheap power, and at the worst one coral islet more or less did not matter. Even if its sands did float off into the sky as had the canyon wall on the Pacific Coast they could do little harm, the Key being well off the air lanes.

It was a premature hope, for they reckoned without the ingenuity of the men behind the scheme. Soon great derricks reared themselves on the Key and drills began biting their way into the earth. By the time the holes reached eight miles depth the transmission towers were built and ready. Then came the flow of power, immense and seemingly inexhaustible. A battery of kineticizer-dynamos commenced operating, suspended by cables deep into the bowels of the planet, converting the weight that was overhead into kilowatts which were sent up to the surface through copper wires. There it was converted into radio power waves and broadcast out to the customers. It was good, clean power. Industry was grateful.

How deep the syndicate eventually sunk its shafts no one ever knew. Nor how many millions of tons of earth weight were converted into electric energy and spewed out to the factories of the world. But it took only a few years for the project to revolutionize modern economics. With power literally as cheap as air, coal holdings became worthless and petroleum nearly so. In the heyday of the power boom cities like New York went so far as to install outdoor heating units so that in the coldest of cold waves its citizens could still stroll about without overcoats. There was no point in conservation any more. Old Terra Firma had gravitons; to burn.

The beginning of the payoff came with the Nassau disaster. The town was flattened by a mighty earthquake, and the attendant tidal wave left little of the Florida coastal cities. When the tremors died



down the British Empire found it had added another island of near continental size to its realm. The Bahama Bank had risen above water and then stood from ten to fifty feet above sea level throughout. But there was a rider attached to that dubious blessing. The bed of the Florida Straits had risen correspondingly and the current of the Gulf Stream diminished. Europeans began to worry about the effect of that upon their climate.

Isostatic adjustment was responsible, sober geologists warned darkly. Let the Caribbean Power gang continue to rob that region of its proper weight there would be nothing to hold it down. Adjacent geographical masses would push in to fill the vacuum, just as the underlying, restless, semifluid magma would push up. The time would soon come when mountains rivaling the Himalayas would rear loftily where the Bahama Bank had been and when that day came the other islands about it and the nearby continental areas might well be only shoal spots in a shallowing sea. The Republic of Cangrejo had to go. It was a matter for the new United Nations Court to decide.

Well, that's the story of Elmer Nicklheim's kineticizer as I know it. I am still wondering whether he was with the gang the day the bombers came over and blasted Caribbean Power off the map. If he was, I think he must have been a prisoner, for the gang he at last teamed up with turned out to be an arrogant, greedy lot.

**THE END**