Destiny Powered Parachutes

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Destiny
CROW
ENTERPRIZES

ALL SEATED – Charlie Brown takes the rear seat with Destiny designer and company owner John Rivers in front. Note the dual throttle controls and the standard 5-point pilot and passenger restraints.

COMPACT PACKAGE – With its canopy stowed, the Destiny 2000 won't require a large trailer to transport it. Of course, you can't taxi it with the canopy in this location.

ROLL BAR – Also new for 2000 was this roll bar, which better protects someone in the aft seat. The method of attachment uses standard parts from the Destiny design.

CHIRON BAG – The Destiny 2000 as evaluated used the Chiron canopy from Sycon of Israel, which offers a greater range of performance. If you choose this, you'll be glad your carry bag shows off your sophisticated taste.

CUSTOM BUCKETS – The seats in the Destiny 2000 are different than many powered parachute brands, which position the two occupants quite close to one another (like many trikes). With well-padded and shaped individual bucket seats as standard, Destiny breaks the mold. I appreciated the sturdy seat belt system.

SMILE WIDE – Commonly on the other side of the camera (they're film and video producers), Hank and Carol Austin got to pose for this still shot of the Destiny 2000 with its Chiron canopy. The Austins represent the brand and have been enthusiastic about the new higher aspect ratio canopy.

FULL CONTROLS – Hands and feet are all used just like in a 3-axis aircraft (though, of course, the controls aren't identical). Destiny delivers their powered parachute standard with the compact digital Engine Information System (EIS).

SADDLE BAG – The old and new, as in last year (left) and this year. You can see that Destiny much improved and enlarged their carry bag (right), now positioned on the left side of the carriage.

SHOCK MOUNT – Destiny gear legs have a suspension system inside composed of chromoly steel tubing paired with a special fiberglass rod. (The rubber boot being held back is purely cosmetic.) However, Destiny says most of the suspension comes from the low-inflation 22-inch tundra tires.

In recent months, several industry observers have noted that powered parachutes' sales appear to be stronger than fixed-wing sales. Many visitors count a large number

of powered parachute manufacturers at airshows. Insiders hear rumors about the large volume of engines these companies are buying. Perhaps you've even said, "There's one flying at my home field now."

Much like trikes before them, the sales of powered parachutes (and powered paragliders) seem to be increasing. Most new flying machine types have their day, and currently powered parachutes appear to be enjoying a great run.

Growing Segment

Despite the fact that the planet supports only a couple million pilots, aviation is highly segmented. Flyers in America enjoy the broadest choices imaginable with aircraft of every description. This incredible diversity is vast enough that we tend to focus only on the types of flying machines that interest us (or that we can afford).

The concept of a parachute (canopy) acting as your wing isn't particularly new. Boats have been using parachutes to lift parasailing resort-goers for years. ParaPlane, the "granddaddy" of all powered parachute manufacturers, started production in the early '80s. Sky diving switched to gliding canopies in the '60s, and not long after, experimenters began trying all manner of ideas never envisioned by ram-air parachute designers.

However, it is a more recent phenomenon for powered parachutes to make a significant market impact on conventional aviation.

I first flew and reported on a couple of Buckeye powered parachutes in August 1995,1 soloing the single-seat Falcon 582 in a humorous first encounter with the genre. I evaluated Canada's Para-Ski powered parachute in July 1998.2In the intervening 3 years, a lot has happened.

Creating a Destiny

The original twin-engine ParaPlane may no longer be with us but it was the original powered parachute. Buckeye came of age in the early 1990s as did Parascender and Six Chuter but most powered parachute manufacturers offered their current line in '97 or later, making them even newer than the World Wide Web.

Destiny Powered Parachutes' Destiny 2000 first flew in November 1999. Barely getting in on the old millennium, the company is one of the newer players in an increasingly crowded powered parachute field. A company of 15 employees expecting to grow to 20 during 2001, Destiny taps its Michigan-based community for many retired auto workers who are rich in knowledge about machining and parts fabrication. Hiring has been furious with the company growing from 2 employees to 15 in just 2 years.

Destiny Powered Parachutes was founded by sole company owner John Rivers. Using connections from his background in NASCAR Winston Cup auto racing, Rivers designed a sturdy carriage using crashworthy concepts from the racing world. His goal was to provide a higher level of comfort and safety in the carriage than he saw in other brands.

Knowing that a crash can be serious even in a vehicle that “already has a parachute out,” Rivers went to extra lengths. The enormous 22-inch tundra tires are one example – they provide the main suspension though landing gear legs are also substantial. With a frame built around such large tires, a resulting 4-inch-higher clearance (higher than other brands, Destiny suggests) gives more clearance in the event of mishaps or poor takeoff and landing technique.

Powered parachute “wings” aren’t described in the way of fixed-wings. Destiny’s Director of Dealer Operation and Finance Charlie Brown wasn’t certain of the span measurement of their various sized canopies. Instead he says pilots refer to their canopies in square footage figures. This contrasts with fixed-wing pilots who are more likely to know the span of their bird’s wing rather than the square area. (I tested my theory with half a dozen 3-axis pilots; only one of the six could name the square footage of his ultralight’s wing while all knew the span instantly. Interesting difference, don’t you think?)

Destiny offers three different canopies at present. They have 500- and 550-square-foot square canopy models supplied both by Apco and Elan as well as the newer Chiron elliptical canopy as flown in this evaluation. The Chiron looks as big, even larger if you glance only at span but is clearly much smaller measuring only 340 square feet. For comparison, fixed-wings run between 100 and 190 square feet.

The Chiron (pronounced sha-RONE) canopy is made in Israel by Sycon Aircraft. After being sewn and tested in Israel, the canopies are again tested in Austria, which Brown feels provides extra assurance to buyers.

Despite a 20% increase in glide angle and some boost in handling qualities, most buyers don’t request the Chiron canopy. The added $900 expense no doubt accounts for some of this hesitancy, but others simply don’t see the reason, says Destiny. Indeed, the Chiron is somewhat more temperamental in the launch phase when you bring the canopy up above the carriage. If the lines are sufficiently entangled the canopy won’t inflate. Contrarily, says Brown, the reliable square canopy rarely has this problem. However, the Chiron is “very safe, very stable,” Brown assures. “We’ve had people learn to fly with this canopy.”

That’s important news since Destiny, following the experience of older powered parachute manufacturers, agrees that “a very high percentage” of all buyers are newcomers to aviation. Brown didn’t cite a figure but many observers put the level of

nonpilots at about 70% of all powered parachute buyers. This fact will probably keep square canopies in good demand, especially since those canopy designers are developing new ideas to challenge the Chiron while hanging on to their good “square” qualities.

Super Sturdy Carriage

The Destiny 2000 comes standard with huge 22-inch tundra tires. These form the primary suspension, says the company, but that’s not all. A combination of chromoly steel and fiberglass rods give the frame more ability to absorb punishing loads while keeping as much force as possible from the occupants. Destiny has worked with the fiberglass rod supplier to arrive at an improved material composition that is less brittle and less likely to crack under load.

Charlie Brown says designer (and company owner) John Rivers has quite thoroughly tested the carriage, subjecting it to all manner of abuse and indecency in the effort to expose any weaknesses in the design. While all powered parachutes tend to offer robustly built carriages, Rivers has been very focused on this quality.

“Being one of the new manufacturers,” explains Brown, “we could listen to customers and design specifically to their needs. Older manufacturers are committed to producing parts they’ve already designed. It takes time and money to change things.” He indicates that Destiny’s bursting onto the powered parachute scene has been aided by listening and acting. Customers seeking something more or different from earlier manufacturers may buy the Destiny 2000 as it already incorporates popular features. One leading example is the more comfortable individual bucket seats in tandem versus trike-like tandem seats that place occupants very close to one another. Destiny also feels this seating arrangement is safer and they add 5-point restraint harnesses to the equation.

Learning Your Destiny

Typically powered parachute instruction works something like this (my synopsis is greatly simplified, please be sure to see a qualified powered parachute instructor). You start out in the back seat going aloft to a safe altitude. Since Destiny installs a throttle in the rear, the instructor can have you run through a session of throttle changes to help you grasp this most important of powered parachute controls.

After you’ve gained good experience with the throttle, perhaps in a flight or two, you’ll move to the front seat. Of course, all instructors will be seeking light or no winds and will work from a wide-open field. With the instructor now working the throttle from the rear, all the student does initially is steer the nosewheel with the hand control on the left. Since it operates fore and aft to steer left and right, it may take some time to acquire comfort with this system.

In light or no winds, the controlling foot bar will be held to a minimum but the instructor can always aid control by hand pulling the canopy's lines at either side. Pulling in toward you by hand is similar to pushing with your legs in physical exertion and an experienced instructor can stay on top of the controls in this manner.

When you've acquired a better understanding, landings can be practiced, still with the instructor manning the rear throttle. As experience is gained, the student can begin coordinating all the controls. With the rear throttle and hand pulling of the steering lines, an instructor can correct wrong moves. A few hours of this routine will find most students ready to solo, according to several instructors I asked.

Flying With a Destiny

In three or so tanks of gas, you should be ready for further learning on your own. Fuel consumption is stated as "21/2 to 31/2 hours on a 10-gallon fuel tank." Translating to the common 66-hp Rotax 582 burn rate of about 3-4 gph, powered parachutes prove to be about as efficient as many fixed-wings or trikes, except that they don't cruise very fast. Getting all around the country isn't why you buy a Destiny or other powered parachutes. But they can provide performance in other ways.

I've long evaluated ultralights for low-over-the-field flying that is unique to our favorite form of aviation. In this category, Destiny does very well. Thanks to a demonstration by experienced powered parachute pilot Hank Austin, it was easy to discover the fun of low winds, end-of-the-day flying low over surrounding fields.

I have to admit my earlier experiences with powered parachutes wasn't inspiring to a pilot used to 3-axis controls or trike performance and simplicity. I had been so cautious on my solo flight in the Buckeye Falcon 582 that I really didn't get around to enjoying the experience, though I admit the view was fantastic. I really expected to go aloft and to drive around with little maneuvering.

My recent powered parachute flight with Hank Austin helped to change my mind significantly, and another flight later in another brand of powered parachute really shifted my mental attitude. In fact, powered parachutes like the Destiny 2000 offer a singular way to enjoy the delight of ultralight flying. When you know you're only going a short distance, you don't need to worry about setting your GPS and radio. If you can live with a 25- to 30-mph max cruise speed, you can relax and enjoy the ground passing by slowly underneath your wheels. With no flaps or trim to adjust, you can concentrate on the basics of low and slow flying, just as ultralights were originally intended.

After an attitude adjustment, I now give a hearty welcome to powered parachutes like the Destiny 2000. They bring in new pilots from outside the usual circles and, what's more, they're a lot of fun. Sure, you need to seek out mild conditions and ideally you fly from a large field that always permits takeoff and landing into the wind. Yet who can

argue with flying light aircraft when the weather is pleasant? You may be able to fly your 3-axis design or trike in stronger conditions, but do you truly enjoy it as much when you must work the controls vigorously?

Measuring performance of powered parachutes like the Destiny 2000 against 3-axis or trike ultralights isn't exact. They genuinely are different flying machines. Nonetheless, some parameters work.

Climb with the 50-hp Rotax 503 and the 550-square-foot canopy while assuming gross or near-gross weight is 250-300 fpm, a rather modest value. Jump up to the optional 66-hp Rotax 582 and climb increases to 400-450 fpm when using the 500-square-foot canopy, or to 600-700 fpm if you selected the 550-square-foot canopy. Go with the optional Chiron canopy and the Rotax 582 if you want climb rates above 700 fpm. To many 3-axis or trike pilots, these rates seem low given 66 hp and a large canopy area. But remember, you can't directly compare vehicles.

Curiously, the factory had no engine-off descent rate figures for me and I was unable to measure any myself. I would think this is a vital statistic in the event your Rotax quits making noise, but apparently this fact isn't a priority for Destiny to know in the sale of their powered parachutes. On the other hand, many fixed-wing pilots I've interviewed also can't tell you this parameter for their ultralight.

Austin demonstrated a diving turn with the Chiron canopy that he says you can't do with a conventional square powered parachute canopy. We saw speeds up to 45 mph in this maneuver, which is certainly a good step beyond what I've experienced in other powered parachutes. If you push hard on the footbar and pull in liberally on the close-by steering lines, you can make the Destiny turn much more rapidly than I expected.

I usually check for longitudinal stability in any aircraft I fly. It does not take a radical maneuver to learn something and everyone should be interested by the results of consistent tests. In a powered parachute, checking for longitudinal stability implies throttle movement since movement of the canopy shape through foot bar motions don't produce the same results.

In a powered parachute, you can forcefully push the foot bars and create quite a braking effect. Or conversely, you can relieve your push on both foot bars suddenly and feel a noticeable acceleration. But these actions don't change longitudinal stability the way changing the throttle does.

Checking the stability profile in a 3-axis airplane, you set up a trim position with throttle and trim and then disturb the balance with a bump of the stick or yoke. A stable ultralight will return to level flight in a few oscillations.

Replicating this same maneuver in a powered parachute – as best you can – will result in a canopy flying at its rigged trim within a very short time, faster than most fixed-wings or trikes.

However, disturbing the throttle will produce a distinct pendular action under the canopy. If you add and subtract power repeatedly, you can make a powered parachute behave in a fairly radical manner. This is closer to erratic pitch control in a gyroplane than anything that can happen in a fixed-wing. Both gyroplane and powered parachutes can be upset by exaggerated actions. Your instructor can train you from throwing the throttle around recklessly.

Will It be Your Destiny?

Base price of the well-equipped Destiny is $13,800 fully assembled. This will save you 30-40 hours assembly time over powered parachutes delivered in kit form. “Typically, the delivered price is about $16,500,” says Charlie Brown. This includes the neon colors, electric starter, hand brake, and of course, full assembly (he says some dealers charge $800 to $1,200 for assembly of other brands).

Reasonably priced or not in your opinion, the availability of financing helps place the Destiny 2000 within reach of most pilots. Here’s how the financing works: You put down 20% (let’s say $3,000 on a $15,000 model which has a few options) and make payments for up to 5 years. At the typical sports equipment lending interest rate of around 13-15%, payments would be about $279 a month. Destiny says that lots of folks don’t want to lay out $15,000 all at once. Financing softens the blow. Interestingly, Destiny doesn’t limit the financing to their model. They’ll finance any brand, new or used. And once the paperwork is submitted you interact directly with the lending institution.

Charlie Brown says that four options top the list of sales. First is the 66-hp Rotax 582 upgrade at $1,600 over the base price, bringing you to a bit over $15,000 for the Destiny 2000. Next is electric starting at $650-$800 depending on which gearbox choice you make; the Rotax E-box is superior but more costly. A hand brake is popular and can be added after the original purchase for $260. Finally, as evaluated in this article, the Chiron canopy adds $900.

Some wonder why they should spend more for the Chiron. I’ve discussed the performance and handling differences afforded by this canopy. The Chiron’s 25% glide angle gain (from 4:1 to 5:1) is worthy and handling is somewhat more responsive. It lifts more and burns less fuel. However, Brown says some people just don’t want more from their canopy and can’t see the price difference as necessary. Indeed, since the older square canopies are the most reliable during inflation, and since they are also being regularly refined, the squares will remain popular on the market.

Brown is also excited by two new options, both shown in the spring of this year. First is the amphibious float option. They're proud of it at $5,500, but if you want the versatility of water or land, Destiny gives you the choice.

The other option is truly a different use of the powered parachute carriage. Using a specially modified flat-bottom boat, the Destiny 2000 can be rolled on board whole and clamped down with custom fittings.3 Once secured, you can zing about on open water (like an airboat) at a reported 35-40 mph. Certainly this could extend the value of your Destiny powered parachute (making it a Powered Airboat, perhaps?)

First flown November 1999, Destiny says they are alone in delivering all fully-built aircraft. Of course, the canopy cannot be installed for shipment and rigging of the many support lines is a precise task that demands some experience. To cope with this situation, Destiny says 70% of all sales go through dealers who have the obligation to assure correct line rigging. A student learns about this as part of the educational process. The factory delivers direct to customers when no dealer representation is available.

Destiny reports more than 200 sales last year and expects to more than double that in 2001. Such a figure may create envy (or disbelief) among small 3-axis producers but powered parachute manufacturers as a segment are certainly currently enjoying good success. With their deluxe, ready-to-fly Destiny 2000, Destiny seems destined to capture the interest of many would-be pilots. If you're seeking further details, I recommend you contact a dealer near you for a flight. The experience has a delicious difference. I have to admit I found more pleasure than expected in the Destiny 2000 with the Chiron elliptical canopy and you might find it right for you as well.

1 See "Pilot Report: Flying a Buckeye Powered Parachute," August '95 Ultralight Flying! magazine
2 See "Pilot Report: The Para-Ski X-Treme," July '98 Ultralight Flying! magazine
3 See "New For the 2001 Flying Season: Destiny Powered Airboat," June '01 Ultralight Flying! magazine

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Seating	2-seat, tandem
Empty weight	365 pounds

Gross weight	850 pounds
Canopy Area	340 square feet [1]
Canopy Loading	2.5 pounds/square foot
Kit type	Fully Assembled
Set-up time	20 minutes, 1 person
Notes:	[1]Chiron canopy; square canopies are available in 500- and 550-square-feet versions.
Standard engine	Rotax 503, dual carb[2]
Power	50 hp at 6,250 rpm[1]

Power loading	17.0 pounds per hp
Cruise speed	29 mph
Rate of climb at gross	700 fpm
Takeoff distance at gross	100-150 feet
Landing distance at gross	100-150 feet
Notes:	[2]Rotax 503 is standard (at $13,800); test Destiny had 66-hp Rotax 582.
Standard Features	Digital Engine Information System (EIS), dual bucket seats, 22-inch tundra tires, spun aluminum wheels, strobe, adjustable front seat,

	canopy bag, line socks, dual throttle control, electric fuel gauge, 5-point seat belts, 10-gallon fuel tank, side stash pouches.
Options	66-hp Rotax 582, electric start, brake, purchase financing. New options include amphibious floats and an airboat option, which uses the Destiny as power (without canopy) and features roll-on ramps and a clampdown system.
Construction	Aluminum airframe, 4130 chromoly steel. Nylon canopy with Dacron suspension lines. Carriage made in the USA; canopy imported.

Design

Cosmetic appearance, structural integrity, achievement of design goals, effectiveness of aerodynamics, ergonomics.

Pros – Destiny Powered Parachutes specializes in delivering a fully ready-to-fly powered parachute with many desirable features built into the base price. Powered parachutes have fairly reasonable prices. In just a couple years, Destiny feels it is an industry leader. Shiny, bright colors give the Destiny 2000 a sleek appearance that stimulates buyers. Most parts can be replaced with relative ease – lots of simple tube and bracket construction.

Cons – Except for the elliptical Chiron (as tested), most powered parachutes use essentially the same square canopies; no substantive performance or handling differences – what you're buying is primarily the carriage as a few canopy suppliers deliver most of the canopies used throughout the powered parachute segment. Since the Destiny is factory-built, owners may be more challenged with repairs (knowing less about its detail than a kit builder).

Systems

Subsystems available to pilot such as: Flaps; Fuel sources; Electric start; In-air restart; Brakes; Engine controls; Navigations; Radio; (items covered may be optional).

Pros – Destiny's standard equipment list is longer than some brands: dual throttle controls, oversized (22-inch) tundra tires, strobe light, and the EIS digital instrument system. Destiny also offers several worthy system options: electric starting, brakes, side carry bags that can be accessed in flight. Repair access is excellent for all components. Prop well protected.

Cons – If you like bells and whistles, the Destiny (and most powered parachutes) may prove too basic to interest some buyers. If canopy repair is needed (tears in cloth or lines), it must be returned to canopy manufacturer as this type of maintenance is beyond nearly all powered parachute pilots.

Cockpit/Cabin

Instrumentation; Ergonomics of controls; Creature comforts; (items covered may be optional).

Pros – In the last year, Destiny added a small roll bar to better protect occupants, especially the rear person. Well-padded seats with excellent seat restraint (5-point harness standard). Front seat is adjustable (fairly rare in powered parachutes). Side carry bag is a nice improvement over last year's version. Front seat entry is as easy as it gets; just step in. Standard rear throttle is essential for training, I feel.

Cons – Destiny's execution of the roll bar is less protective than the Powrachute version, however, it also obstructs visibility less. Entry to rear is more challenging than simple front seat, partly because Destiny enlarged and improved seats over industry standards. No cargo area other than optional side carry bags. No protection against elements (cold or rain).

Ground Handling

Taxi visibility; Steering; Turn radius; Shock absorption; Stance/Stability; Braking.

Pros – Excellent suspension and absorption. Destiny's huge, fat tires also dampen hard touchdowns. Visibility doesn't get better than this in powered aviation (though other powered parachute brands share this trait).

Cons – "Taxiing" (if that's even a correct term) with canopy inflated requires more experience and muscle; still can't easily be done downwind. Once the canopy is deflated, you're done ground handling except by hand pushing. Handled improperly, a

powered parachute can be tipped over by the canopy in crossing conditions (though you're quite well protected in Destiny).

Takeoff/Landing

Qualities; Efficiency; Ease; Comparative values.

Pros – Giant 22-inch tundra tires help soften even rude landings. 66-hp Rotax 582 proves to offer plenty of power to inflate the canopy and start takeoff, followed by quick lift-off. Ground roll quite short. Visibility at pretakeoff, during takeoff, and on approach is huge. All landings are short in powered parachutes; I could tell no change in this by using a Chiron canopy on the Destiny.

Cons – All approaches I've seen are done with power to alter path and provide greater control during landing. I didn't experience a power-off landing in the Destiny but it appears speed control would then be quite limited. Better land a powered parachute, even with the Chiron, into the wind; crosswind capabilities are negligible. Energy retention is weak.

Control

Quality and quantity for: Coordination; Authority; Pressures; Response; and Coupling.

Pros – The Chiron canopy on the Destiny proved to be more maneuverable than I expected from earlier experiences. Diving turns to 45 mph are possible with the Chiron's wider speed range. Rear throttle control adds extra security for an instructor. Throttle at each seat is close and convenient; throttle also moves conventionally (i.e., lever forward is more power).

Cons – Takes a firm foot push to create a rapid response. No rear steering system; at least other than an instructor tugging on lines by hand. Controls seem counterintuitive for 3-axis pilots: no flying is done by hand (though general aviation pilots all use rudders, which aren't so different from powered parachute steering bars); and nosewheel steering is non-intuitive until you acquire some experience with it.

Performance

Climb; Glide; Sink; Cruise/stall/max speeds; Endurance; Range; Maneuverability.

Pros – The Rotax 582 combined with the Chiron canopy produces a vigorous climb rate. Higher aspect ratio Chiron canopy brings glide improvement – around 5:1 versus about 4:1 say proponents – a fact I was completely unable to measure. The Chiron is

also capable of faster gliding turns, says rep; a demonstration revealed more range than I expected. Low-over-the-fields flying is a clear strength.

Cons – While the Chiron is clearly an improvement, powered parachutes are still very limited compared to any other aircraft. Speed barely passes 40 mph even in a descending diving turn; cruise still only 30 mph at best. Climb rates reported by factory seem rather uninspiring. Sink rate figures not available from factory representative and not measured in evaluation.

Stability

Stall recovery and characteristics; Dampening; Spiral stability; Adverse yaw qualities.

Pros – Destiny gets seat belts right compared to many powered parachutes I've examined which have only lap belts. Stalls are largely non-events in powered parachutes, even the Destiny with Chiron canopy, although it is possible, experts say. Emergency landings in small areas will go better than with many ultralights even with the longer gliding Chiron, which has more reach than conventional square canopies.

Cons – All powered parachutes and certainly the Destiny with a Chiron canopy can be flown erratically relative to power so as to upset normal flight (though even this isn't catastrophic if altitude is sufficient – see more detail in article). Rigging of lines is critical, not for the untrained (though the Destiny is sold ready-to-fly).

Overall

Addresses the questions: "Will a buyer get what he/she expects to buy, and did the designer/builder achieve the chosen goal?"

Pros – Good overall value in a ready-to-fly powered parachute with many desirable features as standard: bucket seats, 5-point seat belts, 22-inch tundra tires, strobe light, digital instruments, rear throttle, storage bags. As a newer company Destiny feels they can better answer customer requests; reported sales record seems to support their efforts. Company says they've tested the carriage quite thoroughly. Canopies come from established sewers. Compact storage and transport are further strong points.

Cons – Differences in specifications and characteristics make the Destiny and most powered parachutes harder to compare directly in purchase value to 3-axis or trike ultralights. Powered parachutes just aren't for all buyers and few "experienced" pilots think they'll enjoy them (though I've had a change of attitude; see article).

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