Here is the Meta-Sokol tested in Britain last year. Note the "inverted tricycle" landing gear of the Czechoslovakian lightplane, which is priced at about $12,450 in England

Photo by Roy Allen

by ROBERT R. RODWELL

Czechoslovakia enters world lightplane market. Its single-engine Meta-Sokol shows up well in British tests

A New RED Challenge

Czechoslovakia, the Communist satellite country with the most experienced and best-equipped aircraft industry, is making a strong bid in the world light aircraft markets. The latest lightplane products of Czechoslovakia have been exported to Latin America, several west European countries, India and Pakistan, and many to Soviet Russia itself. In Russia, they are used to equip the charter and ambulance fleet of Aeroflot, the state airline, and the flying schools of Dosaaf, the Soviet "sports" flying organization.

The factor which gives the Czech airplanes strong sales appeal is their price. The Czechs undersell United States and west European manufacturers while making no sacrifices in the way of design and workmanship.

The latest Czech lightplane to be offered for export is the L-40 *Meta-Sokol,* a four-seat, all-metal, low-wing executive transport, with a retractable gear and a 140 h.p. supercharged engine. The aircraft is a lower-powered equivalent of the *Bonanza, Comanche* or Mooney Mark 20A. The writer had the opportunity of assessing this airplane when it made its first visit to England last year for certification by the British Air Registration Board. The A.R.B. could not fault it, and the *Meta-Sokol* is now offered to British flyers at a price of only £4,400 ($12,420) delivered, 17½% import duty paid.

The *Meta-Sokol* is the latest development of the wood and metal *Sokol* three-seater which was produced in quantity shortly after the war. It is powered by a new engine in the famous Walter range, designated the M-332. A four-cylinder, air-cooled in-line engine, the M-332 has direct fuel injection and a centrifugal compressor boosting the manifold pressure by 0.2 atmosphere and the power from 115 b.h.p. at 2,750 r.p.m. to 140 b.h.p. at the

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◄ The Meta-Sokol in flight over Czechoslovakia

Paint Job

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paint would have been dry, but I had to remove the sand and paint with thinner and try it again the next morning.

I used less than a gallon of Fuller's acid-etch primer and followed up with a coat of Nason synthetic enamel. Powdered aluminum and clear enamel were used on the struts and landing gear.

In addition to the 10 days "vacation," a cost breakdown showed $92 for corrosion remover, tape, primer and paints. I had about $18 in materials remaining when I completed the job. It took $6 for fuel to ferry the plane to the desert and back and $12 for car gas on the same trip. I spent $4 for aviation gas to run the generator since the starting loads of the DeVibiss compressor were so high that it would not operate properly on automobile fuel. Another $4.50 went into channel rubber for fairing edges. I used a gallon and a half of yellow on the wings, tail and numbers and three-quarters of a gallon of blue on the fuselage.

To keep the entire operation "legal" with the FAA, it was necessary to have an authorized mechanic supervise the reassembly of the control surfaces and flaps and sign off the log books.

Should I still own this airplane when it needs another paint job, or some larger, faster aircraft that needs repainting, I believe that I would wait for a vacation and do it myself. It's a good change-of-pace from the average job and there's that personal satisfaction in walking up to your brightly-painted little airplane and thinking, "Golly, that looks good and I did it."

END

Red Challenge

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same engine speed. Below 4,500 feet, the supercharger can be used for a maximum period of five minutes at full throttle; above this height it can be run continuously if required. The engine turns a 6¼-foot, two bladed, electrically-operated variable pitch propeller, with a constant-speed propeller promised as optional equipment in the near future.

The most unusual feature of the *Meta-Sokol* is its rearward retracting "reversed tricycle" undercarriage. The mainwheels are far forward of the CG, directly below the wing root leading edge in the lowered position, and the tailwheel is located amidships, level with the trailing edge. The ground attitude is slightly nose-up, and there is slightly more propeller/ground clearance than there would be with a nosewheel undercarriage. The position of the mainwheels far forward permits really savage braking with no danger of nosing over, despite the fact that the tail is off the ground. The unusual position of the third wheel, while giving most of the advantages of a nosewheel undercarriage, simplifies problems of stowage, for it does not compete with the inverted engine and its accessories in the slim nose cowling. This rear wheel is connected directly with the rudder controls when lowered, giving really positive taxiing control, and a tight turning radius. The undercarriage retraction is mechanical, and when raised the mainwheels protrude two-thirds from the wing undersides. Together with a tail bumper they permit an engine-off belly landing with virtually no damage.

The internal trimming carries no stamp of Communist austerity nor antiquated tastes. The demonstrator brought to England was tastefully furnished in light blue and dove grey woolen fabrics, with transparent plastic protectors. The center console was royal blue, and the cockpit fascia or trim, light blue. The large sliding canopy has big side and roof panels, with a smaller rear window, and the field of view is exceptionally good for a low-wing aeroplane. The controls are of the push-pull wheel type popular in American lightplanes, and the plus and minus pitch control buttons for the propeller are mounted on the left wheel only. Toe and parking brakes are fitted for the left seat only, as this is the seat normally occupied when the aircraft is flown solo. The flight instruments are centrally mounted — before each pilot is a glove compartment — and in the demonstrator aircraft they were not particularly comprehensive.

The top row consisted of clock, compass, airspeed indicator, climb indicator and altimeter, in that order from the left, with a turn and bank indicator beneath. The bottom row of instruments comprised boost gauge, tachometer and a combined oil pressure/engine temperature dial. Fuel content gauges are external, on the wing topsides above the two wing root tanks, but they are large and easily read.

There is plenty of cockpit space for more comprehensive instrumentation and for radio equipment. The layout described is what one gets for the basic price. A 600-watt generator takes care of the power problem for radio installations. The two front seats are adjustable between three positions, fore and aft, and both these and the bench-type rear seat are of comfortable foam rubber.

With three people aboard and a full fuel load of 29 U. S. gallons, the *Meta-Sokol* "unstuck" at an indicated airspeed of 50 m.p.h., lifting off all three wheels simultaneously, the flaps being extended 15°. After retracting these, and the undercarriage, and coarsening the propeller pitch until the engine reduced speed from 2,700 r.p.m. to 2,500, the aircraft settled into a steady, full

throttle climb at 85 m.p.h., i.a.s. Despite being a mechanical system, the undercarriage retraction involves the pilot in no long handle-winding stint, for he simply moves the lock lever, and then depresses the retraction lever slightly to disengage the locks, and sweeps it forward through 180°, giving it a firm final push to engage the locks again. Lowering the wheels entails the reverse action.

Normal cruising engine speed is 2,300 r.p.m. at 0.67 atmosphere boost, and this gives an airspeed of 127 m.p.h. Consumption in the cruise is about six U. S. gallons per hour, giving a maximum range of 686 miles. Control forces in all three planes are quite light, particularly in the yawing plane. The aircraft has fair "hands off" stability, tending to undulate slightly in the gusty conditions prevailing for the test.

Directional and lateral stability were excellent. The stall was gentle, though without much warning. It came at 50 m.p.h., i.a.s., with half flap. The nose dropped straight and recovery was fast.

The aircraft is certified as semi-aerobatic in its own country. This classification was not applied for in Britain as it would merely have complicated and lengthened the formalities for what is intended purely as a touring and business machine. The Czech pilot flying with the author did show, however, that the aircraft has fast but viceless spinning characteristics, and we completed some smooth stalled turns at 80 m.p.h., i.a.s.

META-SOKOL DATA TABLE

DIMENSIONS:	
Wing span	32 ft. 9½ in.
Length	24 ft. 9 in.
Wing area	156 sq. ft.
Height	8 ft. 2 in.
WEIGHT:	
Empty weight	1,177 lbs.
Gross weight	2,059 lbs.
PERFORMANCE:	
Maximum sea level speed—with supercharger	147 m.p.h.
Without supercharger	140 m.p.h.
Cruising speed	127 m.p.h.
Initial climb—with supercharger	885 f.p.m.
Without supercharger	630 f.p.m.
Absolute ceiling, with supercharger	16,400 ft.
Without supercharger	12,625 ft.
Takeoff distance to 50 ft.	1,310 ft.
Landing distance over 50 ft.	1,725 ft.
Landing speed, with flap	59 m.p.h.
Range with maximum fuel	686 miles

Such criticisms as we could find in our fairly short, four-flight assessment of the *Meta-Sokol* are few. The main criticism is of the lack of any baggage space, other than a small shelf behind the rear seats. There is no separate luggage compartment, and with four up, only light bags can be taken. Brake movement is far too stiff, and so is the trimmer. This last item is hard to grip, and should be larger. These are small points, easily rectified.

The *Meta-Sokol* is an appealing airplane at an attractive price; ex works it comes out at 72,900 Czech crowns, or about $10,150. It is a simple, practical machine, of good workmanship, and although it lacks the more sophisticated refinements of its American contemporaries, there is ample provision made for the installation of extra gear.

To judge from the *Meta-Sokol* (and its compatriot, the *Super Aero 45*, a 145 m.p.h. light twin already imported in Britain, and ordered in hundreds for export) the Czechs intend to capture lightplane business. American lightplane makers will do well if they do not underestimate their Red rivals.

THE AUTHOR

Robert R. Rodwell, British aviation writer, flew the Meta-Sokol he writes about in "A New Red Challenge" when it was taken to England for British Air Registration Board tests. Rodwell is a frequent contributor of articles to The PILOT *on general aviation developments in Europe.*