THE LEADING EDGE
The Newsletter of M.I.T. Soaring Association, Inc.
November 1994

Editor: Shaun Keller

Contents

SSA Dues Are Due

by Mark Tuttle

Almost all MITSA members will find a 1995 SSA membership renewal form enclosed with this newsletter. Please fill out your renewal form and return it with your dues payment to the SSA as soon as possible, since MITSA receives a few dollars for every member who renews before December 1.

MITSA is a chapter of the SSA, and the SSA simplifies its paperwork by assigning a common renewal date to all members of a given chapter. The renewal date for MITSA is December 31. If you are an SSA member and the SSA knows you are a MITSA member, then you are receiving a renewal form with dues pro-rated so that your SSA membership will expire for the next time on December 31, 1995. This means you may be paying a little more or less than the normal $45 annual dues, but starting next year it will be $45 every year as usual. On the other hand, if you are not an SSA member or if the SSA does not know you are a MITSA member, then I will be telling them in the next few days. I will probably be receiving renewal forms for you in the next few weeks, and I will forward them on to you when I do.

New members since July 1, 1994

Phil Gaisford (private owner)

Steve Sovis (student)

Oliver Summa (student)

Wren McMains (student, tow pilot)

MITSA Contact Info

by Mark Tuttle

Interested in learning more about flying gliders? Contact John Wren, our director of membership, for more information or to schedule a demonstration flight.

President
Lee Marzke (603) 882-0920
Vice President
Ray Beausoleil (203) 871-6013
Treasurer
Mark Tuttle (617) 648-1106
Secretary
Chris Kurz (617) 730-9982
Maintenance
Guenther Eichhorn (617) 646-8750
Logistics
Jakov Kucan (617) 576-0735
Operations
Terry Wong (508) 358-7115
Membership
John Wren (508) 251-2878
Chief Instructor
John Wren (508) 251-2878
Chief Tow Pilot
Lee Marzke (603) 882-0920
Newsletter
Shaun Keller (617) 327-3193

MITSA '94

by Lee Marzke

As another summer draws to a close I am delighted to welcome at least 5 new members to the club and 3 new tow pilots. In addition to those who have stumbled upon us at Sterling, MITSA is beginning to pick up several members through our INTERNET discussions and Guenther's World Wide Web server.

To better serve our new students John Wren has helped several members towards working on their commercial/CFI ratings. I would like to thank those members who have accepted this challenge and hope to see you improve your flying skills and begin to help others learn the skills you have acquired from MITSA.

I would like to extend this challenge of new ratings or skills to all MITSA members. Over the next few months MITSA will be offering several unique ways for members to increase their flying skills or expand existing skills into new areas. I would challenge each member to review their logbook and if you find no intensive training in the last year or two to talk to a CFI.

Unfortunately, MITSA had several minor incidents early in the season which did cause some damage to club equipment. Some of these incidents may have been avoided with recurrent training. I would therefore like to strongly encourage recurrent training for all MITSA members, whether flying club equipment or not. The MITSA board has re-affirmed its policy of requiring MITSA members to pay insurance deductibles on club ships in a members care. The actual MITSA policy can be found in the MITSA office and should be signed by all MITSA members before flying.

MITSA's fleet is now in the best shape that it's been in for years. I have even noticed that more people are volunteering to help with routine maintenance work, perhaps due in part to the pride in keeping these gliders in top shape. If you can volunteer your time please do check with Guenther before doing any work.

There is plenty of good flying left this season, hope to see you at the field or behind the tug.

—Lee Marzke, President, MITSA

Mom Gets High

by Mark Tuttle

When Ed Foley and I got our private pilot certificates at the end of June, Ed passed his test first and took Bernie Loraditch up for a ride while the examiner John Boyce and I finished my oral exam. John looked up to watch Ed and Bernie take off and said, "That's one of the first real joys of becoming a pilot: taking your friends up for a ride." That may be true, but it doesn't compare to taking your mom for a ride.

I seem to descend from a long line of people who like to keep both feet firmly on the ground at all times, but Mom is the special exception to this rule. Mom is the one who never admits to being tired of hearing stories about flying, and who most appreciates the romantic freedom of circling under the clouds. (Okay, I know that finding the core of the thermal is a bit more tense than this, but at least it looks romantic from the ground.)

My parents were planning to be in town in early August, so I called ahead and made arrangements with Chris Kurz, the DO of the day, to take Mom up for a ride the following Sunday afternoon. We took a standard tow to 2500 feet, hunted around for a little while, and eventually found a three-knot thermal that took us to a little over 5000 feet. The thermal became easier to center as we got higher, and Mom and I were cheering in the cockpit together as we found stronger, more consistent lift. The visibility was almost unlimited. I had never seen anything like this before: we could look just north of Boston and see the ocean pushing into the land, and we could look north into New Hampshire and see two ranges of mountains. We went on an extended tour of the Sterling area, and Mom seemed really thrilled when we landed after about 45 minutes.

About four weeks later, by the way, I discovered that soaring can be exciting even when you can't get high. Matt Sovis is the young son of new member Steve Sovis, and Matt has been coming to the field with Steve every weekend. Matt has been watching the operations with much attention to detail, so one day he and I went for a short ride together at the end of a day. Matt seemed to like the tow and tow release the best, and then acted as an audible, front-seat variometer as he gave me constant reports on what the variometer was reading. If only he had said "we're going up," then maybe we could have stayed up longer, but he kept saying "down" and we landed soon after launching. Matt told me later, "It was scary at first, but after that I liked it." Maybe I need to work on that flying on tow business. What do you think?

E.D.'S G.L.I.D.E.R. A.C.C.I.D.E.N.T

by Ed Bristol

Well, better published late than never! I expect Ed is ready for skiing by now! —Editor

Ed was up flying like a bird on a wing
Drifting and doing his favorite thing
Seems that when it came time to land
Glider met runway—too hard to stand
Landing that way did a job on his back
Inching out of the cockpit—he had the knack!
D-12 vertebra is compressed forty percent
Every move he made—he was not too content!
Round his body he now wears a brace
Actually he's almost ready to race!
Clipping along with one crutch and the dog
Calling out orders when his "nurse" is in a fog—
I want to thank all of you with this rhyme
Doing your bit to encourage us at this time!
Every deed you have done has helped out a lot
Nursing can get tedious—especially when it's hot!
Touch base in Foxboro or Falmouth when you can
1994 summer is a bummer for this man!

—jrb

A Bibliography for Sailplanes

by Michael Steckner, Al Bowers,

and Dick Johnson (forwarded by Bob Gibbons)

Recently, contributors to the computer discussion group known as rec.aviation.soaring provided an extensive bibliography for sailplanes. These lists are wonderful. The articles have been lightly edited.
—Editor

Date: 6 Sep 94
From: mks@mr.picker.com (Michael C. Steckner)
Subject: Re: Book of all gliders?

Gliders & Sailplanes of the World
Michael Hardy
ISBN #: 0-7110-1152-4
Ian Allen Pub.
First published 1982

Pictures and technical description of many gliders which have been produced throughout the world.

Jane's World Sailplanes and Motor Gliders
Andrew Coates
ISBN #: 0-87165-021-5
Library of Congress #: 78-58507
Ziff-Davis Pub.

Pictures and technical description of many gliders which have been produced throughout the world.

Gliding Safely
Derek Piggott
ISBN #: 0 7136 3397 2
A+C Black
First published 1991

Talks about particular gliders, I think. —Editor

The World's Vintage Sailplanes 1908–1945
Martin Simmons
ISBN #: 0-85880-046-2
Kookaburra Tech Pub.
First published 1986

Segelflugzeuge vom Wolf zum Discus
Peter Selinger
ISBN #: 3-87943-448-4
Motorbuchverlag 1986

German language history of German sailplanes.

Die Entwicklung der Kunstoff Segelflugzeuge
Dietmar Geistmann
ISBN #: 3-87943-483-2
Motorbuchverlag 1980

German language history of German Sailplanes.

Winning on the Wind
George Moffat
Library of Congress #: 74-82783
The Soaring Press 1974

Discusses many specific sailplanes. —Editor

British Gliders and Sailplanes 1922–1970
Norman Ellison
ISBN #: 389-04162-9
Barnes and Noble pub.

This book attempts to catalogue all the non-powered aircraft produced in this country since 1922. At the same time brief histories of all the various companies and people who have designed and built the whole range of these silent aircraft have been included.

The World's Sailplanes
OSTIV
OSTIV 1958
ISBN #: ?

Fifty Modern Sailplanes
Zuerl

In German.

Date: 1 Sep 1994
From: ak954@yfn.ysu.edu (Albion H. Bowers)
Newsgroups: rec.aviation.soaring
Subject: Re: Book of all gliders?

This is primarily of interest to USA readers, but some other countries might be able to get access to some of them:

Soaring magazine, March 1970
(domestic sailplanes)
Soaring magazine, April 1970
(foreign sailplanes)
Soaring magazine, August 1974
(world directory)
Soaring magazine, August 1978
(supplement to the world directory)
Soaring magazine, November 1983
(world directory)

I was disappointed with Jane's All the World's Aircraft for deleting their sailplane section last year. I understand they will not publish a sailplane section any longer.

Also, someone mentioned the Dick Johnson flight tests. I started trying to make a master index of all of Johnson's articles in this vein. I also did so for Paul Bikle's pieces. If you know of one I am missing, please notify me.

(I have elided Al's list in favor of the similar list from Dick Johnson. —Editor)

Date: 8 Sep 1994
From: ak954@yfn.ysu.edu (Albion H. Bowers)
Newsgroups: rec.aviation.soaring
Subject: Bikle/Johnson FTE series update...

I think I got most of them now. There are two other articles by Johnson that do not relate to flight testing for performance that I know of. And this is quite probably not an all encompassing list either...

(I have elided Al's list in favor of the similar list from Dick Johnson. —Editor)

Al Bowers DOD #900
NASA Dryden Flight Research Center
work: bowers@tifosi.dfrf.nasa.gov
personal: ak954@yfn.ysu.edu
"... tactics always degrade strategy..."
—Frank Bethwaite

Date: 27 Sep 1994
From: rcg@dseg.ti.com (Bob Gibbons)
Newsgroups: rec.aviation.soaring
Subject: Flight Test Bibliography

Inspired by the recent posting of Al Bowers, Dick Johnson recently went through all his old Soaring magazines and related flight test documents. Dick came up with a list not only of his flight test and related soaring papers but also those of Paul Bikle and Gus Raspet.

Dick asked that I post the information here.

start enclosure . . . .

Dick Johnson
Sailplane Development and
Flight Testing Articles

Note: * included in
"THE JOHNSON FLIGHT TESTS"
published by SSA, 1979

1. Development Of The Tiny Mite Sailplane - Soaring, 5/48.
2. Aerodynamics Of The Tiny Mite Sailplane - Soaring, 7/50.
3. Development Of The RJ-5 Sailplane - Soaring, 7/51
4. Wing Drag Due To Twist And Sweep Forward - Soaring, 3/56.
5. Test Flying The Sisu-1 Sailplane - Soaring, 3/61.
6. Development Of The Sailplane Adastra - Soaring, 1/62.
7. Sailplane Flight Test Performance Measurements - Soaring, 4/68
8. Cross Country Soaring, Chapter 6, American Soaring Handbook,62
9. * A Flight Test Evaluation (FTE) Of The Std. Cirrus B Sailplane - Soaring, 3/76.
10. * A FTE Of The Nimbus II Sailplane - Soaring, 4/76.
11. * A FTE Of The ASW-17 Sailplane - Soaring, 6/76.
12. Flight Test Measurements Of Modern Sailplanes - OSTIV XIV Conference, Rayskala, Finland, 6/76.
13. * A FTE Of The PIK-20 Sailplane - Soaring, 9/76.
14. * A FTE Of The Glasflugel 604 Sailplane - Soaring, 10/76.
15. * A FTE Of The Schweizer 1-35 Sailplane - Soaring, 1/77.
16. * A FTE Of The Schweizer 1-26E Sailplane - Soaring, 2/77.
17. * A FTE Of The Jantar 1 And 2A Sailplanes - Soaring, 4/77.
18. * A FTE Of The ASW-19 Sailplane - Soaring, 8/77.
19. Facts About Flaps - Soaring, 9/77.
20. * A FTE Of The Glasflugel 604 Modifications - Soaring, 11/77.
21. * A FTE Of The Mini Nimbus Sailplane - Soaring, 12/77.
22. * A FTE Of The ASW-20 Sailplane - Soaring, 5/78.
23. Measurements Of Sailplane Sink Rates Between Thermals - OSTIV XV Conference, Chateauroux, France, 6/78; Soaring, 6/79.
24. * Further PIK-20 Flight Polar Evaluation - Soaring, 7 & 8/78
25. * A FTE Of The LS-3 Sailplane - Soaring, 11/78.
26. * A FTE Of The PIK-20D-78 Sailplane - Soaring, 1/79.
27. * A FTE Of The Janus Sailplane - Soaring, 3/79.
28. * A FTE Of The Std. Jantars 1 And 2 - Soaring, 7/79.
29. * A FTE Of The Mosquito Sailplane - Soaring, 8/79.
30. * A FTE Of The Zuni Sailplane - Soaring, 9/79.
31. A FTE Of The LS-3A Sailplane - Soaring, 2/80.
32. Performance Improvements Thru Airfoil Shape Correction - Soaring, 3/80.
33. A FTE Of The LS-3-17 Sailplane - Soaring, 6/80.
34. Performance Improvements Thru Airfoil Shape Correction - Part II - Soaring, 8/80.
35. A FTE Of The Slingsby Vega Sailplane - Soaring, 2/81.
36. Performance Improvements Thru Airfoil Shape Correction - Part III, The Nimbus II - Soaring, 7/81.
37. A FTE Of The Ventus A Sailplane - Soaring, 12/81.
38. A FTE Of The Schweizer 1-36 Sailplane - Soaring, 3/82.
39. A FTE Of The Ventus B Sailplane - Soaring, 6/82.
40. A FTE Of The Nimbus III Sailplane - Soaring, 12/82.
41. A FTE Of The Grob-103 Twin II Sailplane - Soaring, 2/83.
42. A FTE Of The ASW-22 Sailplane - Soaring, 4/83.
43. At Last; An instrument That Reads Drag - Soaring, 10/83.
44. A FTE Of The Grob-102 Club IIIb Sailplane - Soaring, 1/84.
45. A FTE Of The Ventus 16.6 Sailplane - Soaring, 4/84.
46. A FTE Of The LS-4a Sailplane - Soaring, 9/84.
47. A FTE Of The LS-4a Sailplane - Part II - Soaring, 3/85.
48. A FTE Of The DG-101G Sailplane - Soaring, 5/85.
49. Turbulators: A Key To Improved Performance (Ventus 16.6) - Soaring, 5/85.
50. A FTE Of The ASK-21 Sailplane - Soaring, 7/85.
51. A FTE Of The DG-300 Sailplane - Soaring, 8/85.
52. A FTE Of The Discus A Sailplane - Soaring, 2/86.
53. A FTE Of The Grob G-109B Motorglider - Soaring, 5/86.

54. Flight Testing/Performance Improvements Thru Wing Profile Correction - Soaring, 3/87.
55. Tail Stall While Towing - Soaring, 5/87.
56. A FTE Of The ASH-25 Sailplane - Soaring, 5/88.
57. How To Avoid A Midair Collision - A New Approach - Soaring, 4/89.
58. Sailplane Performance Flight Test Methods - Soaring, 4/89.
59. A FTE Of The DG-600 Sailplane - Soaring, 8/89.
60. A FTE Of The Grob-103C Twin III Sailplane - Soaring, 3/90.
61. Flight Testing Of Sailplane Stall Warning Systems - Soaring, 7/90.
62. Battery Powered Sailplane Strobe Light Evaluation - Soaring, 2/91.
63. A FTE Of The J-4 Javelin Sailplane - Soaring, 1/92.
64. A FTE Of The SZD-55 Sailplane - Soaring, 3/92.
65. Ventus A And C-15M Flight Test Polars, With And W/O Masak Winglets - Soaring, 10/92.
66. A FTE Of The Krosno KR-03A Two Place Trainer - Soaring, 2/93.
67. A FTE Of The Stemme S-10 Motorglider - Soaring, 1/94.
68. A FTE Of The SZD-50-3 Puchacz Two Place Trainer - Soaring, 4/94.
69. A FTE Of The Schleicher ASW-24W - Soaring, 5/94.
70. Additional Spin Testing Of The SZD-50-3 Puchacz Trainer - Soaring, 6/94.
71. A FTE Of The Stemme S-10 Competition Capabilities -TSA Spirals, 6/94; Sailplane & Glider, Sept-Oct 94.
72. Spin Tests Of The Puchacz Trainer - Sailplane Safety, 7/94.

Planned for late '94 and early '95

73. A FTE Of The Russia 12.5M World Class Sailplane - Soaring,TBD
74. A FTE Of The Blanik L-33 World Class Sailplane - Soaring, TBD
75. A FTE Of The American Spirit Kit Sailplane - Soaring, TBD.
76. Effect Of Turbulator Configuration On Sailplane Winglet Profile Drag - Soaring, TBD.
77. A FTE Of The PW-5 World Class Sailplane - Soaring, TBD

Paul F. Bikle
Sailplane Flight Testing Papers

Compiled by R.H. Johnson, 8 Sept 1994

1. Eyeball Aeronautics (HP-14T Tuft Tests) - Soaring, 11 1969.
2. Polars Of Eight (Sailplanes: Kestral 17, Diamont 16.6, Phoebus A and C, Cirrus 17.7, T-6 (HP-14T modified), BG-12, SGS1-26) - Soaring, 6 1970.
3. Gear Up, Sun Up (T-6 Flight Testing) - Soaring, 7 1970.
4. Description Of The T-6 Sailplane - Soaring, 8 1970.
5. T-6 Performance - Soaring, 10 1970.
6. ASW-12 & Libelle 301B Flight Performance - Soaring, 11 1970.
7. Airspeed Calibration - Soaring, 1 1971.
8. Flight Test Performance Summary (Sailplanes: SGS1-23 (13.24M), SGS1-23D (15.24M), SGS1-23E (16.07M), Prue Standard (15 & 16.44M), GT-2, Ka-6CR, SHK-1, Skylark 4, Sisu 1 & 1A, HP-8) - Soaring, 2 1971.
9. Polars Of Eight (Sailplanes: Std. Cirrus, LS-1C, ASW-15, Std. Libelle, LP-49, SGS1-34, ASW-12, Diamont 18M, T-6) Soaring, 6 1971.

Additionally, Paul prepared many other flight test papers and reports, principally for his long time employer USAF, and later NASA. He retired from NASA in 1971, Captained the U.S. Soaring Team in Yugoslavia in 1972, and performed airfoil profile drag flight testing with his beloved T-6 sailplane during later years; but as yet I have not found if or where those data were published (NASA ?). Paul died of natural causes during early 1991.

August Raspet
Sailplane Flight Testing Papers

Compiled By R.H. Johnson, 7 Sep 94

1. Sailplane Performance Evaluation - Soaring, 5/6 1947.
2. Modifying The Laister - Kauffmann TG-4A - Soaring, 7/8 1948.
3. Technical Progress - Soaring, 3/4 1949.
4. The Weihe (Description and Flight Test Polar) - Soaring, 5/6 1950.

5. Performance Measurements Of A Soaring Bird - 3rd OSTIV Conference, 7 1950.
6. Aerodynamics Of The Tiny Mite Sailplane - Soaring, 11/12 1950.
7. The Horten IV (Description and Flight Test Polar) - Soaring, 11/12 1950.
8. Mississippi State Progress Report - Soaring, 1/2 1951.
9. The Peravia Barograph (Description and Flt. Analysis) - Soaring 3/4 1951.
10. The Role Of The Sailplane In Aerodynamic Research - Soaring, 5/6 1951.
11. Systematic Improvement Of The Drag Polar Of The Sailplane RJ-5 - Soaring, 9/10 1951.
12. The Sailplane In Research - Soaring, 3/4 1952.
13. The Olympia Eon Sailplane (Description and Flight Test Polar) - Soaring, 3/4 1952.
14. Human Muscle Powered Flight - Soaring, 5/6 1952.
15. Control Of The Boundary Layer On Sailplanes - 4th OSTIV Conf. 7 1952.
16. The Sailplane In Research, Training And Sport - Soaring, 1/2 1953.
17. Bathtub Aerodynamics - Soaring, 3/4 1954.
18. The Low Drag Sailplane - Soaring, 11/12 1954.
19. Flight Characteristics Of The Phoenix Sailplane - Soaring, 5/6 1959.
20. The Phoenix As A Solution To Optimum Cross-Country Soaring - Soaring, 8 1960.
21. Biophysics Of Bird Flight - Soaring, 8 1960.

Numerous additional papers were published in:

1. Mississippi State University Reports
2. Aeronautical Engineering Review
3. Institute Of Aeronautical Sciences Journal
4. Research Reviews Journal
5. Thermik Magazine

Also, it is likely Dr. Raspet prepared a number of additional OSTIV Reports beyond those listed here. He died in an unfortunate crash of a BLC research airplane (Army Piper PA-18) at Mississippi State's Research Center Airport on 27 April 1960.

end enclosure . . . .

Bob Gibbons
Texas Instruments, Dallas, TX
Internet: Bob.Gibbons@dseg.ti.com

News Briefs

New Director of Operations

Terry Wong is replacing Bert Speranza as the Director of Operations until the next election.

1-34

Al Gold has taken on being "crew chief" for the 1-34. The first project is a cleaning and waxing. Anyone interested in helping Al with the care of our newly painted 1-34 should give him a call.

Liquidation of The Ohio General Insurance Co.

Years after the failure of the company that once had the SSA group glider insurance, the Office of the Ohio Insurance Liquidator has sent letters containing a description of the policy holder's claim in the liquidation. MITSA lost a lot. However, they say this about actually getting a refund:

> "We do not foresee such a determination being made for at least another 4 years and possibly longer."

That'll be about 7 years after the fact! You may contact them at (614) 487-9200.

Tom Knauff's CFI Clinic

There will be a CFI clinic at Tom Knauff's place in Pa. and it is open to anyone thinking of getting their CFI rating. If you would like to go call 814-355-2483 and get you name on the list or contact John Wren for more details.

It will be held Nov 5 and 6th and costs $125.

Report on MITSA Internet Site

In August, the MITSA server was accessed from 3863 different users. About 19000 documents were retrieved.

—Guenther

Pegasus

Your editor intercepted an e-mail request for info about the Centrair Pegasus sailplane and forwarded it to Dominique Estival, a former MITSA member now living in Switzerland. She replied with the following:

> I asked at my club (the CSVVA in Savoie, France), where we have a number of Pegase C101, and the answer is that Centrair has definitely not gone out of business. They are still producing Pegases and selling parts for them. The name of the company has changed, though, and the address might be different from whatever you have. The correct address, from their latest bill on our records, i.e. as of August 1994, is:
>
> SNCA
> Construction Aeronautique
> B.P. 44 Aerodrome
> F-36300 Le Blanc
> FRANCE
> tel: +33-54-37-07-96 or +33-54-37-06-91
> fax: +33-54-37-48-64

Smithsonian article on WWII Gliders

The June 1994 issue of Smithsonian magazine has a long article with lots of pictures of World War II gliders.

MITSA People

submitted by various club members

Scott Hathcock

Scott Hathcock completed his Diamond distance and Gold goal badge legs in his LS-4a, flying a 300km triangle out of Owl Canyon, CO. July, 1994.

Steve Meassick

This is excerpted from a note Steve sent to Mark Tuttle:

> I moved to New Mexico in the summer of 1993. I am now a professor in the Engineering Department at New Mexico Highlands University in Las Vegas, NM. Las Vegas is as small town (16000 people) in the eastern foothills of the Sange de Cristo Mountains (City elevation 6700 feet, mountains to over 13000 feet). This is a perfect soaring area. The mountains have a 50 mile long ridge running north south that is 12000 feet high. In the winter there are lenticular clouds everywhere. In the summer, cloudbase is approximately 18000 to 20000 feet. East of the mountains are the high plains (all grass, perfect to land anywhere) that stretch to hundreds of miles to the north, south and east. Las Vegas has a municipal airport with two runways, one of which is approximately 9000 long. They currently have a C-172 and C-182 with tow hooks, but the 172 is useless due to the high altitude. I am currently trying to start a soaring club at the University, but am having trouble getting a glider lined up. If you know anyone who could offer some assistance in this endeavor, I would greatly appreciate the help. Also, if anyone is interested in coming to this area for flying, I would be glad to help out in any way that I can. Say high to the people at MITSA.
>
> Department of Engineering
> New Mexico Highlands University
> Las Vegas, NM 87701

E-mail Addresses

FYI: Mark Tuttle maintains a long list of e-mail addresses for current and former MITSA members.

Photo Credits

Photos by Ian Clark and Morrie Tuttle, Mark's father.