

? 8 D 8 ; C < - Epiphyllum

gradinar, ? 5 B J : 18 N ; 8 2008 - 10:40:13

! 5 < 5 9 A B 2 > 0 : B C A > 2 8 - Cactaceae

> 4 A 5 < 5 9 A B 2 > Cactoideae

" @ 8 1 Hylocereae

" > 7 8 > 1 H 8 @ 5 = @ > 4 5 ? 8 D 8 B = 8 : 0 : B C A 8 5 2 J 2 5 4 5 = 2

1 > B 0 = 8 G 5 A : 0 B 0 => < 5 = : ; 0 B C @ 0 > B Adrian Hardy Haworth ? @ 5 7 1812 3.,

2 J ? @ 5 : 8 G 5 ? J @ 2 8 B 5 A E 5 < 0 B 8 G = 8 > ? 8 A 0 = 8 O A 0 > B A @ 5 4 0 B 0 = 0

XVIII 25.: < 5 B > ? @ > 8 7 E > 6 4 0 > B 3 @ J F : 8 B 5 4 C < 8 "epi" - = 0, = 0 4 8 "phyllon"

- ; 8 A B, A 2 J @ 7 0 => 5 A > G 5 2 8 4 = 0 B 0 ? @ 8 ; 8 : 0 = 0 4 J ; 3 8 B 5, H 8 @ > : 8 8

? ; > A : 8 8 ; 8 B @ 8 @ J 1 8 A B J 1 ; 0 1 5 7 1 > 4 ; 8, > A > 1 5 => 2 J 2

2 @ J E = 0 B 0 8 < G 0 A B, A ; 8 A B 0 B 0, B > 2 0 > 1 O A = O 2 0 8 ? @ 5 4 E > 4 => B >

= 0 8 < 5 => 2 0 = 8 5 = 0 @ > 4 0 Phyllocactus (\$ 8 ; > : 0 : B C A). 7 < 5 6 4 C

> 3 @ > < => B > : > ; 8 G 5 A B 2 > @ 0 A B 5 = 8 O, : > 8 B > A 5 > B 3 ; 5 6 4 0 B 2

8 7 : C A B 2 5 = 8 C A ; > 2 8 O, 7 0 @ 0 4 8 2 5 ; 8 : > ; 5 ? 8 5 B > = 0 F 2 5 B > 2 5 B 5

8 <, ? 8 D 8 ; C < 8 B 5 A ? > : > 9 => < > 6 5 4 0 A 5 A ; > 6 0 B 2 G 5 ; = 8 B 5

@ 5 4 8 F 8. > ; O < 0 8 7 = 5 = 0 4 0 ? @ 5 4 8 7 2 8 : 2 0, : 0 : > B B 5 7 8

= 5 2 7 @ 0 G = 8, ? ; > A : 8, @ 0 7 G ; 5 = 5 = 8 A B J 1 ; 0 < > 3 0 B

= 5 > G 0 : 2 0 => 4 0 A 5 ? : 0 6 0 B ? J ? G 8 F 8, @ 0 7 2 8 2 0 1 8 A 5 1 J @ 7 > 2

> 3 @ > < = 8 ? J ? : 8, : > 8 B > A ; 5 4 7 0 ; 5 7 0 = 0 A ; J = F 5 B > A 5

? @ 5 2 @ J 1 0 B 2 J 2 ? @ 5 : @ 0 A = 8 F 2 5 B > 2 5, C 4 8 2 8 B 5 ; = 8 ? > A 2 > 5 B >

C A B @ > 9 A B 2 > 8 @ 0 7 < 5 @.

< 0 B ? ; > A : 8 A B 5 1 ; 0, : > 8 B > 8 < 0 B D > @ < 0 = 0 ; 8 A B 0.

A 8 G : 8 2 8 4 > 2 5 8 < 0 B : @ 0 A 8 2 8 8 5 4 @ 8 F 2 5 B > 2 5, : > 8 B > A 5 > B 2 0 @ O B

2 5 G 5 @ 8 B @ 0 O B = O : > ; : > 4 = 8. " 5 8 < 0 B = 0 9 - G 5 A B > D > @ < 0 B 0 = 0

D C = 8 O 8 G 5 A B > 4 > A B 8 3 0 B 3 0 A <. & J D B 8 = 0 2 B > @ 0 B 0 8 ; 8 B @ 5 B 0 B 0

3 > 4 8 = 0 A ; 5 4 2 : > @ 5 = O 2 0 = 5 B >.

> : @ 0 A > B 0 = 0 @ 5 6 4 0 B 5 ? 8 D 8 ; C < 0 4 > > @ E 8 4 5 8 B 5.

> - ? > ? C ; O @ = 8 2 8 4 > 2 5 A 0 : Epiphyllum oxypetalum, E. phyllanthus, . crenatum, E. darrahii, E. hookeri 8 4 @.

J 2 2 ; 0 6 = 0 B 0 8 B > ? ; 0 0 B < > A D 5 @ 0 = 0 B @ > ? 8 G 5 A : 8 B 5 3 > @ 8,

? 8 D 8 ; C < 8 B 5 A 5 @ 0 7 2 8 2 0 B 1 C @ =>, 2 8 A 5 9 : 8 > B ; ; > = 8 B 5 = 0

4 J @ 2 5 B 0 B 0 8 > 1 @ 0 7 C 2 0 B < => 6 5 A B 2 > 2 J 7 4 C H = 8 : > @ 5 = 8. 0

B > 2 0 ? 8 D 8 ; C < 8 B 5 G 5 A B > 1 8 2 0 B = 0 @ 8 G 0 = 8 > @ E 8 4 5 8 B 5 = 0

: 0 : B C A > 2 8 O A 2 O B. " 5 E = 8 B 5 = 5 3 > ; 5 < 8 : > A > 2 8 4 = 8, 3 J 2 : 0 2 8

: > @ 5 = 8, ? > 4 > 1 => = 0 3 J 1 0 2 A < C : 2 0 B 2 ; 0 3 0 B 0 8 4 > A B 0 2 O B

E @ 0 = 8 B 5 ; = 8 2 5 1 5 A B 2 0 = 0 A B J 1 ; 0 B 0. \$ 0 : B 8 G 5 A : 8

AJ15AB2C2018B5 ;8AB0 A5 ?>O2O20B 2J2 284 =0 <0;:8  
;NA?8F8, ?>4 0@5>;8B5 2 70>AB@5=8B5 G0AB8 =0 874J=:8B5.  
&25B>25B5 A0 A @07=>>1@07=0 >:@0A:0, 3>;5<8,  
DC=85284=8, A 4J;68=0 4>30 A<. 8 480<5BJ@15 A<., A 4J;30  
F25B=0 B@J18G:0, ?@8 ?>25G5B> 284>25 A5 @07B20@OB ?@57  
=>1B0(A 87:;NG5=85 =0 .crenatum). AB5AB25=8O 8< E018B0B A5  
?@>AB8@0 >B 5:A8:> 4> 0@03209, :J45B> B5 >B402=0 A5  
:C;B828@0B, 2 B@>?8G5A:8B5 3>@8 =0 &5=B@0;=0 <5@8:0 8  
N6=> 5:A8:>, =0 >B45;=8 >AB@>28 2 0@81A:> <>@5  
( 0?04=8B5 =488) 8 =0 >B45;=8 <5AB0 2 @078;8O. ">G=8O  
?@>87E>4 =0 ?8D8;C<8B5 =5 5 >?@545;5=. ?@8@>40B0  
1>;H8=AB2>B> >B 284>25B5, @0AB0B :0B> 5?8D8B=8 @0AB5=8O  
2J2 2;06=8B5 B@>?8G5A:8 3>@8, =0AB0=5=8 2  
@07:;>=5=8OB0 =0 :;>=8B5, 2J@EC :>@0B0 =0 4J@25B0B0, 2  
F5?=0B8=8 ?> A:0;8B5- =02AO:J45 :J45B> 8<0 E@0=8B5;=0  
A@540, 5AB5AB25=0 8;8 =0=>A=0, 2 AJA54AB2> A >@E8458,  
1@><5;8528, <JE>25 8 4@C38 ?@54AB028B5;8 =0  
B@>?8G5A:0B0 D;>@0, => 70 @07;8:0 >B ?0@078B8@018B5  
@0AB5=8O, B5 =8:>30 =5 A5 E@0=OB AJA A>:0 =0 4@C38  
@0AB5=8O.  
>@5=>20B0 A8AB5<0 5 :><?0:B=0, @07@0AB20 A5 ?>  
?>2J@E=>ABB0 =0 A;>O AC1AB@0B, C4J@60 28AO18B5 ABJ1;0  
>B ?040=5 8 38 E@0=8, 0 2J74CH=8B5 :>@5=8, G5AB> 87;87018  
>B A0<8B5 ABJ1;0, C;02OB 2;030 >B 2J74CE0 8 ?><030B =0  
ABJ1;0B0 74@02> 40 A5 704J@60B 70 8740B8=8B5 =0 A:0;8B5  
8;8 :;>=8B5 =0 4J@25B0B0 8 E@0AB8B5. ?8D8;C<8B5 6825OB 2  
E0@<>=8O AJA AJA548B5 A8 >@E8458, 1@><5;8528 8 <JE>25.  
@8 >B3;5640=5, B@O120 40 A5 ?>A04OB 2 E@0=8B5;5=  
AC1AB@0B, AJ4J@60I 2 4>60% >B >15<0 A8 ;8AB>2:0, 4>20%  
54@>7J@=5AB ?OAJ: 8;8 G0:J;, >AB0=0;0B0 G0AB  
C?;JB=8B5;=8 <0B5@80;8 A<5A5=8 A B>@D. >1@8 @57C;B0B8  
4020 >B3;5640=5B> =0 B578 @0AB5=8O 2 G8AB AD03=C<, :0B>  
A0:A88B5 A5 =0?>O20B 254=J6 =0 425 A54<8F8 A E@0=8B5;5=  
@07B2>@. 70:@8B8 ?><5I5=8O, B5 A5 >B3;5640B 3;02=> :0B>  
A0:A89=8 @0AB5=8O. 07?>;030B A5 =0 @02=><5@=>  
>A25B5=> <OAB>, =0 AB@0=8 >B ?@5:8B5 A;J=G528 ;JG8.  
:@00 =0 \$52@C0@8 @0AB5=8OB0 70?>G20B 40 @0AB0B, 0 2 :@00 =0  
?@>;5BB0 ?> ABJ1;0B0 A5 ?>O2O20B F25B=8B5 ?J?:8. >B>20  
2@5<5 4> :@00 =0 FJDB560, ?8D8;C<8B5 A5 ?>;820B >18;=>,  
:0B>=5 A5 4>?CA:0 70AB>O20=5 =0 2;030 2 ?>G20B0. 5@8>40  
=0 FJDB56 ?@8 1>;H8=AB2>B> >B 284>25B5 8 A>@B>25B5  
?@>4J;6020 >B ?@8; 4> .=8. >B>20 2@5<5 5  
=5>1E>48<> 40 A5 ?>;820B @54>2=>, 40 A5 ?>4E@0=20B A  
<8=5@0;=8 8 >@30=8G=8 B>@>25 8 40 A5 4J@60B =0 B>?;> 8  
2;06=> <OAB>. 5 A5 ?@5?>@JG20 40 A5 ?@5<5AB20B 8;8  
2J@BOB @0AB5=8OB0, 70I>B> 5 2J7<>6=> 40 >?040B ?J?:8B5.  
!;54 FJDB560, =0 ?8D8;C<8B5 B@O120 40 A5 4045 :@0BJ:  
?5@8>4 =0 ?>:>9(12-15 4=8), @0AB5=8OB0 B@O120 40 A5 >AB02OB

=0 ?>;CAO=:0 8 40 A5 >3@0=8G8 ?>;820=5B>, 4>:0B> =5  
 70?>G=5 2848< @0AB56 =0 ABJ1;0B0. B B>3020 ?>;820=5B>  
 B@O120 40 1J45 C<5@5=> 8 @54>2=> 4>:0B> =5 70?>G=5  
 5A5==>B> 70E;0640=5. :@0O =0 :B><2@8 @0AB5=8OB0  
 ?@5<8=020B =0 78<5= @568<, ?>44J@60 A5 B5<?5@0BC@0 2  
 3@0=8F8B5 =06-10 3@04CA0 8 2=8<0B5;=> A5 =02;06=O20  
 AC1AB@0B0 254=J6 2 <5A5F0. @8 ?>-28A>:8 B5<?5@0BC@8 8  
 ?>-G5AB> ?>;820=5, @0AB560 ?@>4J;6020, => ?>@048  
 =8A:>B> =82> =0 A25B;8=0B0 A5 >1@07C20B C28A=0;8,  
 ?>25E=0;8 ABJ1;0, :>8B> 5 ?>-4>1@5 40 A5 >BAB@0=O20B =0  
 ?@>;5B.

A8G:8 5?8D8B8 87;;NG8B5;=> 1J@7> 87B>1020B AC1AB@0B0,  
 70 B>20 B@O120 2AO:0 3>48=0 40 A5 ?@5A0640B 8;8  
 ?5@8>48G=> 40 A5 =0B>@O20B. 09-4>1@>B> 2@5<5 70  
 ?@5A0640=5=0 ?8D8;C<8B5 5 :@0O =0 ?5@8>40 =0 FJDB56.  
 >30B 40 A5 @07<=>6020B G@57 A5<5=0, => ?>  
 @07?@>AB@0=5= 5 2535B0B82=8O <5B>4 70 @07<=>6020=5,  
 G@57 2:>@5=O20=5 =0 874J=:8. ?8D8;C<8B5 ;5A=> A5  
 ?>44020B =0 2JB@5284>20 8 <564C284>20 E81@84870F8O.

A>15=> A5 F5=OB E81@848B5 A @07;8G=8 284>25 Disocactus.  
 828B5(G8AB8B5) 284>25 A B5E=8B5 15;8 F25B>25 A0 A5  
 AJE@0=8;8 A0<> 2 ?@8@>40B0 8 A?5F80;878 @0=8B5  
 :>;5:F88 =0 1>B0=8G5A:8B5 3@048=8. 0 B>20 ?J:  
 F25B>20B0 30<0 =0 E81@848B5 5 B>;:>20 1>30B0 8 2;;NG20  
 B>;:>20 >BB5=JF8 8 ?>;CB>=>25, G5 5 @07@01>B5=  
 A?5F80;5= AB0=40@B(>B @0;A:>B> @048=0@A:>

@C65AB2> 2 =3;8O) A F25B>28 A:0;8, 70 40 A5 A;>68 2 @54 8 40  
 A5 AJE@0=8 =><5=;:0BC@0B0. 2@>?0 H8@>:> A0  
 @07?@>AB@0=5=8 E81@848B5 =0 B578 @0AB5=8O A  
 54@>F25B=8 &5@5CA8(?> ?@028;>Hylocereus). @57C;B0B =0  
 A5;5:F8>=>=0B0 459=>AB, ?@>4J;602010 >:>;>150 3>48=8  
 A0 ?>;CG5=8 ?>25G5 >B300 45:>@0B82=8 E81@84=8 D>@<8 A  
 >3@><=8, G5AB> 0@><0B=8 F25B>25 A =09-@07;8G=8  
 >:@0A:8.

> <>@D>;>38G=8B5 A8 >A>15=>AB8 E81@848B5 =0  
 ?8D8;C<8B5 A5 @0745;OB =0 B@8 3@C?8:

- "@528AB> 75;5=8 ABJ1;0, ?;>A:8 8;8 B@8@J18 A G5B8=:0 2  
 0@5>;8B5. &25B>25B5 A5 >B20@OB ?@57 45=O, F25B0 8< 5 >B  
 G5@25= 4> ?C@?C@5=, A :JA0 F25B=0 B@J18G:0. >;CG5=8 A0  
 2 @57C;B0B =0 :@JAB>A20=5 <564 C Epiphyllum ackermanni X Selenicereus grandiflorus.
- !82> 75;5=8 ABJ1;0, 4J;38, <5A5AB8 A ?;>A:8 A53<5=B8,  
 O2=> 87@075=8 8740B8=8 8 5420 7015;568<8 0@5>;8.  
 &25B>25B5 A0 BJ<=> G5@25=8 A 3;0=F>2 1;OAJ.: >;CG5=8  
 A0 2 @57C;B0B =0 :@JAB>A20=5 Epiphyllum crenatum % Selenicereus grandiflorus.
- "J<=> 75;5=8 A53<5=B8, :JA8 8 4515;8, A 3>;5<8 8740B8=8  
 8 2J;=5AB8 0@5>;8.  
 %81@848B5 =0 ?8D8;C<8B5 2 @57C;B0B =0 <=>3>1@>9=8B5  
 :@JAB>A20=8O A0 ?@84>18;8 ?>-3>;O<0 CAB>9G82>AB 8

874@J6;82>AB?@8>B3;5640=5,>B5?8D8B=8B58<?@54F8.  
"578:0:BCA8A5@072820B1C@=>.

7?>;7209B5=09-4>1@5?;0AB<0A>20A0:A8O A4C?:870  
>BF5640=5. 0AB5=85B>878A:204>1@54@5=8@010A5,  
1>30B0?>G20,:>OB>A5?>44J@602;06=02?5@8>40=0  
0:B825=@0AB56(0?@8;-A5?B5<2@8). =5O704J;68B5;=>  
B@O120408<0?@8<5A8=0?OAJ;?5@;8B8=0B@>H5=0  
4J@25A8=0.

>;820BA5>18;=>,0>B:@0O=0A5?B5<2@8@0AB5=85B>A5  
?>43>B2O7078<0B0,:0B>?>;820=5B>A5A256404>  
<8=8<C<.

>4E@0=20A5?>2@5<5=0?>;820=5B>>B<094>023CABA  
>18:=>25=B>@70:0:BCA8.

>1@5540A5?@5A06402AO:03>48=0. >G20: 0  
?@83>B2O=5B>=00;B5@=0B82=8AC1AB@0B870  
>B3;5640=5B>=0?8D8;C<,<>6540A587?>;720?>G2070  
AB09=8@0AB5=8O,?@8<5A5=0A?5<70,54@>7J@=5AB?OAJ;,  
?5@;8B,=0B@>H5=8,4J@25A=8:>@8,:0B>A5871O320B?>G28  
1>30B8=0B>@D. 5F5?B0B070?@83>B2O=5873;5640B0:0:  
1G0AB;8AB>2:0  
1G0AB4J@25A=8:>@8>B83;>;8AB=8  
1G0AB=04@>15=0G0<>204J@25A8=0(6-12<<. 2480<5BJ@)  
1G0AB?5@;8B8;8?5<70  
?>65;0=85<>6540A54>10281/2G0AB=04@>15=84J@25=8  
2J3;810.

8AB>2:0B0<>6540A570<5=8A:8A5;0?>G20(?>4E>4O10  
70>4>45=4@>=8870;88).!C1AB@0B0B@O12040AJ4J@60B@8  
G0AB8>@30=8G=8<0B5@80;8854=0G0AB?5@;8B8;8?5<70.  
4>102:0<>6540A5A;>68=02A5:830:C18G=8A<. ?>G201/2  
G0H0:>AB=>1@0H=>. 09-G5AB8OB2@548B5;518B=>=>A=0B0

2JH:0. >;820=5: 06=>540=5>AB02OB5AC1AB@0B0  
=0?J;=>4070AJE=5."@O12040A5?>;820>18;=>,B0:0G5  
2>404087;575>B4J=>B>=0A0:A8OB0. 7G0:20A5  
?>2J@E=>AB=8OA;>9=0?>G20B04070AJE=5,?@54840A5  
?>;55>B=>2>. ;0AB<0A>28B5A0:A88A0?>-?>4E>4O188  
878A:20B?>-<0;:>=01;N45=85,=>B@O120<=>3>40A5  
2=8<02040=O<0704J@60=5=087;8H=02>402?>G20B0,  
B>20<>6540A5>:065A<J@B>=>A=>. ?8D8;C<8B5@0AB0B  
?@57?@>;5BB085A5=B0,B0:0G5B>30208<0B=C640>B  
?>25G:>2>40. 5@8>40=0?>G82:05A;54FJDB5608?>  
2@5<5=078<=8B5<5A5F8,?@57B>202@5<5A5?>;820  
>;>B>40A54J@60B@0AB5=8OB0;5:>2;06=8.

!25B;8=0:

@54?>G8B0BD8;B@8@0=0B0A;J=G520A25B;8=0,=O:>;>  
G0A0A;J=F5ACB@8=8;8A;54>154,=>=8:>3048@5:B=>

A;J=G52>>3@O20=5?@57>154=8B5G0A>25. @5778<0B0  
B@O12040A5>AB02OB=0E;04=>,=>=5ABC45=><OAB>, =55  
4>1@5408<04>?J;=8B5;=0A25B;8=0(>B4<0H=8;0<?8)  
A;5470;570=0A;J=F5B>. >30B40A5>B3;5640B8?>4  
87:CAB25=0A25B;8=0>BD;>@8AF5=B=0;0<?0(500-1000fc)  
?>AB025=8=0@07AB>O=85>B25A<. @5<5B>?@57:>5B>A5  
>A25BO20>B;0<?0B0B@O12040A5AJ>1@078AJA57>=0,  
B>205>B87::;NG8B5;=0206=>AB70@0728B85B>=0?J?:8B5.  
"5<?5@0BC@0,2;06=>AB,42865=85=02J74CE0: ?8D8;C<8B5  
?@54?>G8B0B B5<?5@0BC@8<564C88223@04CA0,=>?>=0AOB  
;5B=8B56538,0:>A0=0A5=G5AB><OAB>8A54J@60B2;06=8.  
74J@60B8=0B5<?5@0BC@8?>=8A:8>B03@04CA070  
=O:>;:>G0A0,=>157038=0B0:>38>AB028B570?>4J;3>  
=0ABC40. 0AB5=8OB0A5C2@5640B?@8?>AB>O==8  
B5<?5@0BC@8?>=8A:8>B53@04CA0. @54?>G8B0B40  
?@5:0@0B78<0B0=07018B5=><OAB>?@8B5<?5@0BC@0  
<564C88123@04CA0. !2568B578<=8B5<?5@0BC@884J;38B5  
=>18A0=5>1E>48<8,7040A5>1@07C20B?J?:8.  
;06=>ABB0B@O120405?>=550%,=>@0AB5=8OB0?>=0AOB8  
?>=8A:8AB>9=>AB8. >;8209B5>18;=>?@573>@518B5  
;5B=8<5A5F8,:0B>=5701@02OB540?>44J@60B528A>:08  
2J74CH=0B02;06=>ABA5AB8=0?@JA:20=8O. 18G0B408<0  
42865=85=02J74CE0,=>=58ABC45=8B5B5G5=8O8;8  
3>@5I;5B5=2OBJ@. &8@:C;0F8OB0=02J74CE0A5  
?>4?><030,:0B>A5>B40;5G0B@0AB5=8OB0=08725AB=>  
@07AB>O=8554=>>B4@C3>. ">@5=5: 0AB5=8OB0B@O12040A5  
B>@OB A10;0=A8@0=0B>@10-10,?>=5254=J62<5A5F0,>B  
=0G0;>B>=0?@>;5BB04>5A5=B0. >6540A587?>;720  
:0:B>3@0=C;8@0=0B>@,B0:08B5G=0. 518207>B040  
=0428H020\$>AD>@080;8O2J2D>@<C;0B0. 040A5  
?>4?><>3=5FJDB560,?>4A8;5B5=56=8B5ABJ1;0A;54  
:@0O=078<0B0,:0B>38?>4E@0=8B5AB>@1577>B(0-10-10),  
254=J62:@0O=0\$52@C0@8,=0G0;>B>=00@B8254=J62  
=0G0;>B>=0>5<2@8. @5778<0B0=5A5B>@8!  
01>;O20=8O: ?8D8;C<8B5@O4:>A5=0?040B>B?0@078B8.  
09-G5AB>A@510=8B5A018B>=>A=0B02JH:082;0A5AB0B0  
18B>=>A=02JH:0,?@8=0?045=85?@JA:09B5AJA A8AB5<5=  
8=A5:B8F848;8A50% @07B2>@>B0;:>E>;82>40. :>A5  
4J@60B=02J=?@57;OB>B>, <>30B401J40B=0?04=0B8>B  
>E;N28,:>8B>?@8G8=O20B>3@><=815B870:@0B:>2@5<5.  
@5A0640=5: @5A0640=5A5?@028A0<>=04>1@5  
2:>@5=5=8@57=8F8,:>30B>A57015;568@0AB568A5  
@0728OB?>=52-3=>28ABJ1;0. 0AB5=85B>A5?@5E2J@;O2  
A0:A8O A480<5BJ@20A<.,87?>;720A5=>2,ACEAC1AB@0B8=5  
A5?>;820?>=554=0A54<8F0. !;54B>20A5?>;820  
2=8<0B5;=>,B>20?@>4J;60204>548=<5A5FA;54  
?@5A0640=5B>. @5A0640=5B>A5?@028,7040A5=01028=0  
@0AB5=85B>=>20?>G20AJA A2568E@0=8B5;=82515AB20.

">20=O<0 40 1J45 =5>1E>48<>3-4 3>48=8, 0:> A5  
?>4E@0=20 @54>2=>. >;5<8B5 @0AB5=8O 5 4>1@5 40 A5  
?@5A0640B =09-<0;:> <5A5F A;54 FJDB560, >A25= 0:> =5 A5  
@072820 =O:0:2> :>@5=>2> 3=85=5 8;8 4@C38 701>;O20=8O  
=0 :>@5=8B5. &JDB56: 0B> >A=>2=> ?@028;>, ?8D8;C<8B5  
15 FJD=0B ?@57 ?@>;5BB0, ?>A;542010 2B>@0B0 8;8 B@5B0B0  
3>48=0 >B 2:>@5=O20=5B>. 0 40 =0:0@0B5 ?8D8;C<8B5 40  
FJD=0B, B@O120 40 A5 4J@60B =0 ?>=8A:8 B5<?5@0BC@8 ?@57  
78<0B0(<564C6 812 3@04CA0). B45;O=5 =0 2:>@5=5=8 8 =5  
2:>@5=5=8 874J=:8: 7?>;7209B5 ?;0AB<0A>28 A0:A88 A  
@07<5@8-10 A<. 70 2AO:0 2:>@5=5=0 874J=:0, ?><=5B5 G5  
:>@5=8B5 =0 ?8D8;C8B5 =5 B@O120 40 70AJE20B =0?J;=>.  
25 874J=:8 <>30B 40 A5 ?>A04OB 2 54=0 8 AJI0 A0:A8O A  
@07<5@20 A<., B0:0 ?>;5A=> 15 4>AB83=0B 7@O;>AB 8 15  
70FJDBOB ?>-1J@7>. 5 ?>A06409B5 874J=:0B0 =0 4J;1>G8=0  
?>-3>;O<0 >B3-5 A<., 4>AB0BJG=> 5 40 5 =0 4J;1>G8=0,  
:>;>B> 40 <>65 40 A5 4J@68 A0<>AB>OB5;=> 87?@025=0.  
>AB025B5 A0:A88B5 =0 AO=:0 70 54=0 A54<8F0, A;54 B>20 O  
?@5<5AB5B5 =0 ?>AB>O==>B> 8 <OAB>. 5 ?>;8209B5 ?>=5  
54=0 A54<8F0, ;5:> A;542018O <5A5F 8 @54>2=> A;54 B>20.  
5E0=87<0 ?@8 ?>A0640=5B> =0 =5 2:>@5=5=8B5 874J=:8  
5 AJI8O. >G20B0 B@O120 40 A5 4J@68 ACE0 8;8 ;5:> 2;06=0,  
@0AB5=8OB0 B@O120 40 A0 =0 AO=:0 4>:0B> =5 ?CA=0B :>@5=8.  
">20 15 AB0=5 A;54 >:>;>2 <5A5F0, 0:> 2@5<5B> 5 B>?;>.  
!;54 :0B> A5 >1@07C20B :>@5=8 ?@5<5AB5B5 A0:A88B5 =0  
A25B;>. :> A5 ?>O2OB 3=8;>AB=8 ?@>F5A8 87@565B5  
1>;=0B0 G0AB, 4578=D5:B8@09B5, >AB025B5 40 70AJE=5  
@0=0B0 =0?J;=> 8 70?>G=5B5 ?@>F5A0 >B=0G0;>.