SMON für den VC 20

Der Super-Maschinensprache-Monitor auf dem VC 20. Mit mindestens 16 KByte können Sie die Vorteile des SMON nutzen. Für den Assembler-Programmierer ist SMON für den VC 20 ein unentbehrliches Werkzeug.

SMON VC 20 ist eine Umsetzung des bekannten SMON für den C64, veröffentlicht in Sonderheft 8/85, auf dem VC 20. Die Stärken des SMON sind vor allem seine mächtigen Suchbefehle. Als Zusatz enthält er einen Disketten-Monitor und natürlich einen Disassembler. Der Wermutstropfen beim SMON VC 20 ist, daß man die Trace-Befehle nicht korrekt umsetzen kann. Das liegt am etwas höheren Systemtakt des VC 20 und den damit verbundenen Timing-Problemen.
Sämtliche Standard-Befehle für 6502-Assembler sind natürlich im SMON vorhanden. Dazu kommen Umrechnungsroutinen für Hexadezimal-Zahlen, komfortable Verschiebe- und Suchbefehle. Der Direktassembler des SMON verarbeitet sogar Label.
»SMON VC 20« liegt beim VC 20 im Bereich ab $A000. Tippen sie das Listing »SMON VC 20« ein, speichern Sie es und starten es dann. Daraufhin wird auf der Floppy das Programm »SMON.EX VC 20« generiert. Dieses laden Sie dann mit »,8,1« und starten es mit SYS 40960. Die Übersicht aller zur Verfügung stehenden Befehle entnehmen Sie bitte der Tabelle.
Für Datasette: Da das Ladeprogramm »SMON VC 20« auf die Diskette ein File schreibt, müssen Datasetten-Besitzer einen anderen Weg gehen. Tippen Sie im Generator-Programm die Zeilen ab Zeilennummer 300 nicht mit ein. Statt dessen tippen Sie folgende Zeilen ein:

```
300 FOR I=0 TO 4090:READ A:POKE 40960+I,A:P=P+A:
NEXT
310 IF P<>523777 THEN PRINT "DATAS NICHT OK":STOP
320 PRINT "DATAS OK"
RUN
```

Wenn die Meldung »Datas ok« erscheint, geben Sie ein:

```
POKE 43,0:POKE 44,160:POKE 45,0:POKE 46,176
<RETURN>
SAVE "SMON.EX VC20" <RETURN>
```

Damit steht SMON auf Datasette zur Verfügung.

(K.H. Templin/og)

Befehlsübersicht zum SMON

Alle Eingaben erfolgen in der hexadezimalen Schreibweise. In Klammern angegebene Adreßeingaben können entfallen. SMON benutzt dann sinnvolle, vorgegebene Werte.

Bei allen Ausgabe-Befehlen ist gleichzeitig die Ausgabe auf einem Drucker möglich. Dazu werden die Befehle geSHIFTet eingegeben.

A 4000 (Assembler)
symbolischer Assembler (Verarbeitung von Label möglich. Label bestehen aus dem Buchstaben »M« und einer zweistelligen Hex-Zahl von 01 bis 30.) Startadresse $4000

B 4000 4200 (Basic-Data)
erzeugt Basic-DATA-Zeilen aus Maschinenprogramm im Bereich von $4000 bis $41FF

C 4010 4200 4013 4000 4200 (Convert)
in ein Programm, das von $4000 bis $4200 im Speicher steht, soll bei 4010 ein 3-Byte-Befehl eingefügt werden. Dazu wird das Programm ab $4010 bis 4200 auf die neue Adresse $4013 verschoben. Alle absoluten Adressen, die innerhalb des Programmbereichs ($4000 bis $4200) stehen, werden umgerechnet, so daß die Sprungziele stimmen.

D 4000 (4100) (Disassembler)
disassembliert den Bereich von $4000 (bis $4100) mit Ausgabe der Hex-Werte. Änderungen sind durch Überschreiben der Befehle möglich.

F (Find)
findet Zeichenketten (F), absolute Adressen (FA), relative Sprünge (FR), Tabellen (FT), Zeropage-Adressen (FZ) und Immediate-Befehle (FI)

G (4000) (Go)
startet ein Maschinenprogramm, das bei $4000 im Speicher beginnt

I 01 (I/O-Gerät)
stellt die Gerätenummer für Floppy (08 oder 09) oder Datasette (01) ein

K A000 (A500) (Kontrolle)
zum schnellen Durchsuchen des Bereichs von $A000 (bis $A500) nach ASCII-Zeichen (32 Byte pro Zeile). Änderungen sind durch Überschreiben der ASCII-Zeichen möglich.

L (4000) (Load)
lädt ein Maschinenprogramm an die richtige oder eine angegebene Adresse ($4000)

M 4000 (4400) (Memory Dump)
gibt den Inhalt des Speichers von $4000 (bis $43FF) in Hex-Byte und ASCII-Code aus. Änderungen sind durch Überschreiben der Hex-Zahlen möglich.

0 4000 4500 AA (Occupy)
füllt den Speicherbereich von $4000 bis $4500 mit vorgegebenem Byte ($AA) aus

P 05 (Printer)
setzt Geräteadresse 5 für Drucker

R (Register)
zeigt die Registerinhalte und Flags an. Änderungen sind durch Überschreiben möglich.

S "Test" 4000 5000 (Save)
speichert ein Programm von $4000 bis $4FFF unter dem Namen »Test« ab

V 6000 6200 4000 4100 4200 (Verschieben)
ändert in einem Programm von $4100 bis $41FF alle absoluten Adressen, die sich auf den Bereich von $6000 bis $6200 beziehen, auf einen neuen Bereich, der bei $4000 beginnt.

W 4000 4300 5000 (Write)
verschiebt den Speicherinhalt von $4000 bis $42FF nach $5000 ohne Umrechnung der Adressen (zum Beispiel Tabellen)

X (Exit)
springt aus dem Monitor-Programm ins Basic zurück

 # 49152
Dezimalzahl umrechnen

$ 002B
4stellige Hex-Zahl umrechnen

% 01101010
8stellige Binärzahl umrechnen

? 0344 + 5234
Addition oder Subtraktion zweier 4stelliger Hex-Zahlen

= 4000 5000 (Vergleich)
vergleicht den Speicherinhalt ab $4000 mit dem ab $5000

Z (Diskmonitor)
ruft den Diskmonitor auf. Dieser verfügt über folgende Befehle:

R (12 01) (Read) (Nur im Diskmonitor)
liest Track $12, Sektor $01 von der Diskette in einen Puffer im Speicher. Fehlt die Angabe von Track und Sektor, wird der logisch (!) nächste Sektor gelesen.

W (12 01) (Write) (Nur im Diskmonitor)
schreibt den Puffer im Speicher nach Track $12, Sektor $01 auf die Diskette. Ohne Angabe von Track und Sektor werden die letzten Eingaben von »R« benutzt.

M (Memory Dump) (Nur im Diskmonitor)
zeigt den Pufferinhalt als Hexdump (wie normales »M«). Weitere Ausgabe mit CBM-Taste, Abbruch mit STOP. Werte können durch Überschreiben geändert werden.

X (Exit) (Nur im Diskmonitor)
springt in SMON zurück

F (weitere Disketten-Befehle initialisieren) (Nur im Diskmonitor) sind die Befehle initialisiert, gilt:

M (07)
Memory Dump (Floppy-RAM/ROM)
V 6000 0400
Verschieben eines 256-Byte-Blocks von $6000 in den Laufwerkspuffer 1 beziehungsweise in das Floppy-RAM
@ normale Disketten-Befehle senden
X zurück zum normalen Disketten-Monitor

```
0 DATA 169,20,141,22,3,169,162,141,23,3,0,
  39,35,36,37,44,58,59,61,63,65              <145>
1 DATA 66,67,68,70,71,73,75,76,77,79,80,82
  ,83,84,86,87,88,90,0,0,0,0,218             <165>
2 DATA 170,45,169,7,169,27,169,251,166,28,
  164,181,163,244,170,153,168,208            <060>
3 DATA 166,107,169,60,170,92,165,16,171,22
  6,163,67,168,182,170,77,168,248            <039>
4 DATA 163,192,169,60,168,133,163,77,168,2
  40,171,66,170,210,169,109,163              <252>
5 DATA 8,174,0,0,0,0,0,0,0,0,255,255,1,0,6
  5,90,73,82,84,128,32,64,16,0,2             <184>
6 DATA 1,1,2,0,145,145,13,83,217,49,55,50,
  13,0,125,76,125,169,13,13,32,32            <095>
7 DATA 80,67,32,32,83,82,32,65,67,32,88,82
  ,32,89,82,32,83,80,0,32,78,86              <045>
8 DATA 45,66,68,73,90,67,0,2,4,1,44,0,44,8
  9,41,88,157,31,255,28,28,31,31             <056>
9 DATA 31,28,223,28,31,223,255,255,3,31,12
  8,9,32,12,4,16,1,17,20,150,28              <218>
10 DATA 25,148,190,108,3,19,1,2,2,3,3,2,2,
   2,2,2,3,3,2,3,3,3,2,0,64,64,128           <211>
11 DATA 128,32,16,37,38,33,34,129,130,33,1
   30,132,8,8,231,231,231,231,227            <247>
12 DATA 227,227,227,227,227,227,227,227,22
   7,231,167,231,231,243,243,247,223         <178>
13 DATA 38,70,6,102,65,129,225,1,160,162,1
   61,193,33,97,132,134,230,198,224          <064>
14 DATA 192,36,76,32,144,176,240,48,208,16
   ,80,112,120,0,24,216,88,184,202           <197>
15 DATA 136,232,200,234,72,8,104,40,64,96,
   170,168,186,138,154,152,56,248            <209>
16 DATA 137,156,158,178,42,74,10,106,79,35
   ,147,179,243,51,211,19,83,115,82          <136>
17 DATA 76,65,82,69,83,83,79,76,76,76,67,6
   5,65,83,83,73,68,67,67,66,74,74           <217>
18 DATA 66,66,66,66,66,66,66,66,83,66,67,6
   7,67,67,68,68,73,73,78,80,80,80           <231>
19 DATA 80,82,82,84,84,84,84,84,84,83,83,7
   9,83,83,79,79,84,66,82,68,68,68           <161>
20 DATA 77,78,68,84,84,78,69,80,80,73,77,8
   3,67,67,69,77,78,80,86,86,69,82           <069>
21 DATA 76,76,76,76,69,69,78,78,79,72,72,7
   6,76,84,84,65,65,83,88,88,89,69           <199>
22 DATA 69,76,82,76,82,82,65,67,65,89,88,6
   5,80,68,67,89,88,67,67,88,89,84           <227>
23 DATA 80,82,67,83,81,73,69,76,67,83,73,7
   5,67,68,73,86,88,89,88,89,80,65           <061>
24 DATA 80,65,80,73,83,88,89,88,65,83,65,6
   7,68,8,132,129,34,33,38,32,128            <234>
25 DATA 3,32,28,20,20,16,4,12,216,169,8,14
   1,176,2,169,4,141,175,2,234,234           <031>
26 DATA 234,234,234,234,234,234,234,234,23
   4,234,234,162,5,104,157,168,2,202         <121>
27 DATA 16,249,173,169,2,208,3,206,168,2,2
   06,169,2,186,142,174,2,169,82,76          <234>
28 DATA 255,162,32,194,162,240,11,32,126,1
   62,141,169,2,165,252,141,168,2            <063>
29 DATA 96,162,164,32,128,162,32,128,162,2
   08,28,32,126,162,169,254,133,253          <199>
30 DATA 169,255,133,254,32,194,162,208,12,
   141,119,2,230,198,96,32,126,162           <242>
31 DATA 44,162,251,32,141,162,149,1,32,154
   ,162,149,0,232,232,96,32,202,162          <052>
32 DATA 201,32,240,249,201,44,240,245,208,
   3,32,202,162,32,175,162,10,10,10          <175>
33 DATA 10,133,180,32,202,162,32,175,162,5
   ,180,96,201,58,144,2,105,8,41,15          <119>
34 DATA 96,32,202,162,201,32,240,249,198,2
   11,96,32,207,255,198,211,201,13           <044>
35 DATA 96,32,207,255,201,13,208,248,169,6
   3,32,210,255,174,174,2,154,162            <137>
36 DATA 0,134,198,32,81,163,161,209,201,39
   ,240,17,201,58,240,13,201,59,240           <115>
37 DATA 9,201,44,240,5,169,46,32,210,255,3
   2,202,162,201,46,240,249,133,172          <050>
38 DATA 41,127,162,32,221,10,160,240,5,202
   ,208,248,240,194,32,21,163,76,214          <079>
39 DATA 162,138,10,170,232,189,41,160,72,2
   02,189,41,160,72,96,165,252,32             <044>
40 DATA 42,163,165,251,72,74,74,74,74,32,5
   3,163,104,41,15,201,10,144,2,105           <037>
41 DATA 6,105,48,76,210,255,169,13,32,210,
   255,138,76,210,255,32,76,163,169           <129>
42 DATA 32,76,210,255,169,13,76,210,255,13
   3,187,132,188,160,0,177,187,240            <080>
43 DATA 6,32,210,255,200,208,246,96,230,25
   1,208,2,230,252,96,169,6,141,134           <253>
44 DATA 2,169,27,141,15,144,234,234,234,23
   4,234,234,234,174,174,2,154,76             <161>
45 DATA 116,196,160,160,169,140,32,86,163,
   162,59,32,64,163,173,168,2,133             <136>
46 DATA 252,173,169,2,133,251,32,35,163,32
   ,76,163,162,251,189,175,1,32,42            <175>
47 DATA 163,32,76,163,232,208,244,96,234,2
   34,234,234,234,32,78,162,162,251           <246>
48 DATA 32,202,162,32,154,162,157,175,1,23
   2,208,244,96,234,234,234,234,234           <077>
49 DATA 234,234,234,133,170,169,32,160,9,3
   2,210,255,6,170,169,48,105,0,136           <195>
50 DATA 208,244,96,32,73,162,174,174,2,154
   ,162,250,189,174,1,72,232,208,249          <028>
51 DATA 104,168,104,170,104,64,32,100,162,
   162,58,32,64,163,32,35,163,160             <237>
```

Listing. »SMON VC 20« benötigt mindestens eine 16-KByte-Erweiterung

```
52 DATA 18,162,0,32,76,163,161,251,32,42,1
   63,161,251,32,57,164,208,241,32          <186>
53 DATA 93,164,144,224,96,32,126,162,160,1
   8,162,0,32,202,162,32,154,162,129        <108>
54 DATA 251,193,251,240,3,76,209,162,32,57
   ,164,208,236,96,201,32,144,12,201        <126>
55 DATA 96,144,10,201,192,144,4,201,219,14
   4,4,169,46,41,63,41,127,145,209          <252>
56 DATA 173,134,2,145,243,32,103,163,200,1
   92,22,96,32,111,164,76,102,164           <194>
57 DATA 32,103,163,165,251,197,253,165,252
   ,229,254,96,32,148,164,32,134,164        <069>
58 DATA 240,14,32,134,164,240,251,201,32,2
   08,5,141,119,2,230,198,96,32,228         <107>
59 DATA 255,72,32,225,255,240,2,104,96,76,
   214,162,160,22,36,172,16,246,132         <147>
60 DATA 200,132,208,169,255,32,195,255,169
   ,255,133,184,133,185,173,175,2           <248>
61 DATA 133,186,32,192,255,162,0,134,211,2
   02,32,201,255,32,207,255,32,210          <125>
62 DATA 255,201,13,208,246,32,204,255,169,
   145,76,210,255,160,0,177,251,36          <184>
63 DATA 170,48,2,80,12,162,31,221,60,161,2
   40,47,202,224,21,208,246,162,4           <133>
64 DATA 221,73,161,240,33,221,77,161,240,3
   0,202,208,243,162,56,221,17,161          <200>
65 DATA 240,20,202,224,22,208,246,177,251,
   61,251,160,93,17,161,240,5,202           <226>
66 DATA 208,243,162,0,134,173,138,240,15,1
   62,17,177,251,61,181,160,93,198          <106>
67 DATA 160,240,3,202,208,243,189,234,160,
   133,171,189,216,160,133,182,166          <185>
68 DATA 173,96,160,1,177,251,170,200,177,2
   51,160,16,196,171,208,7,32,74,165        <234>
69 DATA 160,3,208,2,164,182,142,174,0,141,
   175,0,96,160,1,177,251,16,1,136          <048>
70 DATA 56,101,251,170,232,240,1,136,152,1
   01,252,96,162,0,134,170,32,100           <097>
71 DATA 162,32,140,165,165,173,201,22,240,
   9,201,48,240,5,201,33,208,17,234         <092>
72 DATA 32,148,164,32,81,163,162,21,169,45
   ,32,210,255,202,208,250,32,93,164        <216>
73 DATA 144,217,96,162,44,32,64,163,32,35,
   163,32,76,163,32,117,166,32,203          <012>
74 DATA 164,234,234,234,234,234,234,234,23
   4,234,234,234,234,234,234,234,234        <146>
75 DATA 234,234,234,234,234,234,234,234,23
   4,234,234,234,234,234,234,234,234        <107>
76 DATA 234,234,234,234,234,160,0,166,173,
   208,17,162,3,169,42,32,210,255           <093>
77 DATA 202,208,248,36,170,48,133,76,106,1
   66,36,170,80,41,169,8,36,171,240         <123>
78 DATA 35,177,251,41,252,133,173,200,177,
   251,10,168,185,60,3,141,174,0,200        <141>
79 DATA 185,60,3,141,175,0,32,190,166,164,
   182,32,147,166,32,203,164,189,91         <250>
80 DATA 161,32,210,255,189,147,161,32,210,
   255,189,203,161,32,210,255,169           <113>
81 DATA 32,36,171,240,3,32,73,163,162,32,1
   69,4,36,171,240,2,162,40,138,32          <060>
82 DATA 210,255,36,171,80,5,169,35,32,210,
   255,32,44,165,136,240,22,169,8           <190>
83 DATA 36,171,240,7,169,77,32,210,255,160
   ,1,185,173,0,32,42,163,136,208           <082>
84 DATA 247,160,3,185,172,160,36,171,240,9
   ,185,175,160,190,178,160,32,66           <198>
85 DATA 163,136,208,237,165,182,32,103,163
   ,56,233,1,208,248,96,164,211,169         <080>
86 DATA 32,145,209,200,192,22,144,249,96,2
   28,171,208,4,5,173,133,173,96,185        <102>
87 DATA 173,0,145,251,209,251,208,4,136,16
   ,244,96,104,104,96,208,28,138,5          <140>
88 DATA 171,133,171,169,4,133,181,32,207,2
   55,201,32,240,13,201,36,240,9,201        <243>
89 DATA 40,240,5,201,44,240,1,96,198,181,2
   08,232,96,224,24,48,14,173,174           <162>
90 DATA 0,56,233,2,56,229,251,141,174,0,16
   0,64,96,32,126,162,133,253,165           <245>
91 DATA 252,133,254,32,81,163,32,228,166,4
   8,251,16,246,169,0,133,211,32,76         <135>
92 DATA 163,32,35,163,32,76,163,32,207,255
   ,169,1,133,211,162,128,208,5,162         <001>
93 DATA 128,142,177,2,134,170,32,126,162,1
   69,22,133,200,44,177,2,16,8,234          <098>
94 DATA 234,32,207,255,234,234,234,169,0,1
   41,177,2,32,161,166,201,70,208           <236>
95 DATA 22,70,170,104,104,162,2,181,250,72
   ,181,252,149,250,104,149,252,202         <192>
96 DATA 208,243,76,100,165,201,46,208,17,3
   2,154,162,160,0,145,251,209,251          <024>
97 DATA 208,4,32,103,163,200,136,96,162,25
   3,201,77,208,25,32,154,162,160           <132>
98 DATA 0,201,63,176,239,10,168,165,251,15
   3,60,3,165,252,200,153,60,3,32           <130>
99 DATA 161,166,149,169,224,253,208,4,169,
   7,133,183,232,208,240,162,56,165         <159>
100 DATA 166,221,91,161,240,5,202,208,246,
   202,96,165,167,221,147,161,208,244       <100>
101 DATA 165,168,221,203,161,208,237,189,1
   7,161,133,173,32,161,166,160,0,224       <235>
102 DATA 32,16,9,201,32,208,8,189,77,161,1
   33,173,76,49,168,160,8,201,77,240        <168>
103 DATA 32,160,64,201,35,240,26,32,157,16
   2,141,174,0,141,175,0,32,161,166         <246>
104 DATA 160,32,201,48,144,27,201,71,176,2
   3,160,128,198,211,32,161,166,32          <132>
105 DATA 157,162,141,174,0,32,161,166,192,
   8,240,3,32,190,166,132,171,162,1         <091>
106 DATA 201,88,32,154,166,162,4,201,41,32
   ,154,166,162,2,201,89,32,154,166         <172>
107 DATA 165,173,41,13,240,10,162,64,169,8
   ,32,129,166,169,24,44,169,28,162         <247>
108 DATA 130,32,129,166,160,8,165,173,201,
   32,240,9,190,3,162,185,11,162,32         <033>
109 DATA 129,166,136,208,244,165,171,16,1,
   200,200,32,138,166,198,183,165,183       <240>
110 DATA 133,211,76,151,165,32,141,162,141
   ,175,2,96,32,141,162,141,176,2,96        <096>
111 DATA 76,209,162,160,2,132,188,136,132,
   185,132,187,136,132,183,32,202,162       <103>
112 DATA 201,34,208,234,32,202,162,145,187
   ,200,230,183,201,34,208,244,198          <127>
113 DATA 183,173,176,2,133,186,165,172,201
   ,83,240,19,32,194,162,240,9,162          <079>
114 DATA 195,32,128,162,169,0,133,185,169,
   0,108,48,3,162,193,32,128,162,162        <072>
115 DATA 174,32,128,162,108,50,3,32,126,16
   2,32,202,162,73,2,74,74,8,32,128         <061>
116 DATA 162,32,81,163,40,176,12,165,253,1
   01,251,170,165,254,101,252,56,176        <142>
117 DATA 9,165,251,229,253,170,165,252,229
   ,254,168,138,132,252,133,251,132         <106>
118 DATA 98,133,99,8,169,0,133,211,32,117,
   166,165,252,208,15,32,73,163,165         <128>
119 DATA 251,32,42,163,165,251,32,208,163,
   240,3,32,35,163,32,76,163,162,144        <117>
120 DATA 234,234,234,234,234,234,234,234,2
   34,40,32,73,220,32,221,221,234,234       <115>
121 DATA 234,234,234,76,86,163,32,141,162,
   170,164,211,177,209,73,32,240,163        <058>
122 DATA 138,168,32,154,162,56,176,169,32,
   184,162,160,8,72,32,202,162,201          <180>
123 DATA 49,104,42,136,208,245,240,235,32,
   184,162,162,0,138,134,251,133,252        <021>
124 DATA 168,32,207,255,201,58,176,132,233
   ,47,176,4,56,76,196,168,133,253          <074>
125 DATA 6,251,38,252,165,252,133,254,165,
   251,10,38,254,10,38,254,24,101,251        <219>
126 DATA 8,24,101,253,170,165,254,101,252,
   40,105,0,76,52,169,32,122,162,234         <000>
127 DATA 234,234,234,162,4,189,135,160,149
   ,170,202,16,248,32,81,163,166,170         <070>
128 DATA 165,171,32,205,221,230,170,208,2,
   230,171,169,68,32,210,255,169,193         <110>
129 DATA 32,210,255,160,0,177,251,132,98,1
   33,99,32,209,221,32,99,164,162,3          <075>
130 DATA 176,10,169,44,166,211,224,73,144,
   227,162,9,134,198,189,125,160,157         <166>
131 DATA 118,2,202,208,247,76,110,163,32,1
   22,162,32,141,162,162,0,129,251           <222>
132 DATA 72,32,99,164,104,144,247,96,32,90
   ,162,165,166,208,2,198,167,198,166        <186>
133 DATA 32,48,170,134,181,160,2,144,4,162
   ,2,160,0,24,165,166,101,174,133           <008>
134 DATA 170,165,167,101,175,133,171,161,1
   64,129,168,65,168,5,181,133,181           <080>
135 DATA 165,164,197,166,165,165,229,167,1
   76,29,24,181,164,121,107,160,149          <162>
136 DATA 164,181,165,121,108,160,149,165,1
   38,24,105,4,170,201,7,144,232,233         <205>
137 DATA 8,170,176,207,165,181,240,15,76,2
   09,162,56,162,254,181,170,245,166         <111>
```

```
138 DATA 149,176,232,208,247,96,32,98,170,
    76,214,169,76,98,170,197,167,208          <195>
139 DATA 2,228,166,176,19,197,165,208,2,22
    8,164,144,11,133,180,138,24,101           <091>
140 DATA 174,170,165,180,101,175,96,32,90,
    162,32,122,162,32,48,170,32,203           <156>
141 DATA 164,200,169,16,36,171,240,38,166,
    251,165,252,32,70,170,134,170,177         <101>
142 DATA 251,133,181,32,74,165,160,1,32,70
    ,170,202,138,24,229,170,145,251           <000>
143 DATA 69,181,16,25,32,81,163,32,35,163,
    36,171,16,15,177,251,170,200,177          <001>
144 DATA 251,32,70,170,145,251,138,136,145
    ,251,32,106,166,32,102,164,144,181        <018>
145 DATA 96,32,100,162,162,39,32,64,163,32
    ,35,163,160,6,162,0,32,76,163,161         <163>
146 DATA 251,32,57,164,208,249,162,0,32,93
    ,164,240,3,76,186,170,96,32,126           <148>
147 DATA 162,160,0,32,207,255,234,234,234,
    32,202,162,201,46,240,2,145,251           <245>
148 DATA 200,192,16,144,242,96,32,122,162,
    162,0,161,251,193,253,208,11,32           <201>
149 DATA 103,163,230,253,208,243,230,254,2
    08,239,32,76,163,76,35,163,169,255        <172>
150 DATA 162,4,149,250,202,208,251,32,202,
    162,162,5,221,110,160,240,69,202          <024>
151 DATA 208,248,134,169,32,180,171,232,32
    ,207,255,201,32,240,243,201,44,208        <110>
152 DATA 3,32,122,162,32,81,163,164,169,17
    7,251,32,214,171,208,24,136,16,246        <223>
153 DATA 32,35,163,32,76,163,164,211,192,2
    0,144,9,32,148,164,32,114,164,32          <044>
154 DATA 81,163,32,99,164,144,218,160,19,7
    6,150,164,189,115,160,133,168,189         <199>
155 DATA 120,160,133,169,170,240,6,32,180,
    171,202,208,250,32,122,162,32,203         <102>
156 DATA 164,32,44,165,165,168,36,171,208,
    9,168,208,33,165,173,208,29,240           <092>
157 DATA 13,164,169,185,173,0,32,214,171,2
    08,17,136,208,245,132,170,32,140          <212>
158 DATA 165,32,111,164,32,102,164,144,209
    ,96,32,106,166,240,245,32,192,171         <134>
159 DATA 157,204,3,189,60,3,157,108,3,32,2
    02,162,160,15,201,42,208,2,160,0          <213>
160 DATA 32,175,162,157,60,3,152,157,156,3
    ,96,133,180,74,74,74,74,89,108,3          <245>
161 DATA 57,204,3,41,15,208,10,165,180,89,
    60,3,57,156,3,41,15,96,104,104,32         <114>
162 DATA 207,255,201,87,208,3,76,86,173,20
    1,66,208,3,76,208,173,201,81,208          <255>
163 DATA 3,76,79,173,201,83,240,3,76,209,1
    62,32,141,162,72,32,141,162,72,32         <254>
164 DATA 73,162,160,0,177,251,141,188,2,15
    2,145,251,169,54,141,22,3,169,172         <212>
165 DATA 141,23,3,162,252,76,236,163,162,3
    ,104,157,170,2,202,16,249,104,104         <127>
166 DATA 186,142,174,2,173,168,2,133,252,1
    73,169,2,133,251,173,188,2,160,0          <145>
167 DATA 145,251,169,20,141,22,3,169,162,1
    41,23,3,169,82,76,255,162,32,81           <066>
168 DATA 163,234,234,234,234,234,234,234,2
    34,96,141,171,2,8,104,41,239,141          <095>
169 DATA 170,2,142,172,2,140,173,2,104,24,
    105,1,141,169,2,104,105,0,141,168         <144>
170 DATA 2,169,128,141,188,2,208,16,234,16
    2,12,32,246,252,216,162,5,104,157         <115>
171 DATA 168,2,202,16,249,173,20,3,141,187
    ,2,173,21,3,141,186,2,186,142,174         <170>
172 DATA 2,88,173,170,2,41,16,240,8,32,101
    ,172,169,82,76,255,162,44,188,2           <103>
173 DATA 80,31,56,173,169,2,237,189,2,141,
    177,2,173,168,2,237,190,2,13,177          <232>
174 DATA 2,208,103,173,191,2,208,95,169,12
    8,141,188,2,48,18,78,188,2,144,205        <107>
175 DATA 174,174,2,154,169,172,72,169,112,
    72,76,186,173,32,101,172,169,168          <178>
176 DATA 133,251,169,2,133,252,32,76,163,1
    60,0,177,251,32,42,163,200,192,7          <097>
177 DATA 240,9,192,1,240,242,32,76,163,208
    ,237,173,169,2,174,168,2,133,251          <144>
178 DATA 134,252,32,73,163,32,203,164,32,1
    99,165,32,228,255,240,251,201,74          <183>
179 DATA 208,10,169,1,141,188,2,208,47,206
    ,191,2,165,145,201,254,208,38,76          <014>
180 DATA 189,172,32,242,173,169,64,208,10,
    32,242,173,234,234,234,234,234,169        <020>
181 DATA 128,141,188,2,186,142,174,2,32,73
    ,162,32,101,172,173,188,2,240,55          <021>
182 DATA 162,0,234,234,234,234,234,234,234
    ,234,234,234,234,234,234,234,234          <131>
183 DATA 234,234,234,234,234,234,234,234,2
    34,120,169,64,141,46,145,169,160          <193>
184 DATA 141,46,145,169,71,141,40,145,142,
    41,145,169,149,162,172,141,187,2          <007>
185 DATA 142,186,2,174,174,2,154,120,173,1
    87,2,174,186,2,141,20,3,142,21,3          <042>
186 DATA 173,168,2,72,173,169,2,72,173,170
    ,2,72,173,171,2,174,172,2,172,173         <234>
187 DATA 2,64,32,141,162,141,190,2,32,141,
    162,141,189,2,32,141,162,141,191          <204>
188 DATA 2,76,214,162,173,184,2,174,185,2,
    141,20,3,142,21,3,96,173,20,3,174         <014>
189 DATA 21,3,141,184,2,142,185,2,169,149,
    141,22,3,169,172,141,23,3,96,169          <033>
190 DATA 31,141,15,144,234,234,234,234,162
    ,0,189,228,175,157,208,2,232,224          <086>
191 DATA 13,144,245,162,42,32,64,163,32,20
    7,255,201,42,240,249,162,6,221,210        <073>
192 DATA 175,208,17,142,193,2,138,10,170,2
    32,189,216,175,72,202,189,216,175         <042>
193 DATA 72,96,202,16,231,76,31,174,169,0,
    133,251,169,191,133,252,133,254           <142>
194 DATA 165,251,105,4,133,253,32,252,163,
    32,225,255,240,15,173,141,2,240           <156>
195 DATA 246,169,0,133,198,165,252,201,192
    ,144,227,76,31,174,32,126,162,160         <032>
196 DATA 18,162,0,32,202,162,32,154,162,12
    9,251,32,57,164,208,243,32,81,163         <083>
197 DATA 76,36,174,32,85,175,173,193,2,201
    ,2,208,3,76,235,174,162,0,189,0           <227>
198 DATA 191,141,195,2,232,189,0,191,141,1
    96,2,138,76,203,174,32,194,162,208        <131>
199 DATA 3,76,141,174,32,141,162,141,195,2
    ,32,141,162,141,196,2,32,85,175           <086>
200 DATA 173,193,2,201,2,240,32,32,13,175,
    162,13,32,198,255,160,0,32,207,255         <243>
201 DATA 234,234,234,234,153,0,191,200,208
    ,243,32,204,255,32,188,175,76,73          <043>
202 DATA 174,32,64,175,162,13,32,201,255,1
    60,0,185,0,191,32,210,255,166,144         <058>
203 DATA 208,3,200,208,243,32,204,255,169,
    50,32,13,175,76,182,175,141,209           <180>
204 DATA 2,173,195,2,32,121,175,142,216,2,
    141,217,2,173,196,2,32,121,175,142        <111>
205 DATA 219,2,141,220,2,162,15,32,201,255
    ,162,0,189,208,2,32,210,255,232           <034>
206 DATA 224,13,144,245,32,204,255,76,140,
    175,162,15,32,201,255,162,0,189           <162>
207 DATA 242,175,32,210,255,232,224,8,144,
    245,76,204,255,169,15,168,162,8           <092>
208 DATA 32,186,255,169,0,32,189,255,32,19
    2,255,169,13,168,162,8,32,186,255         <251>
209 DATA 169,1,162,241,160,175,32,189,255,
    76,192,255,162,48,56,233,10,144           <146>
210 DATA 3,232,176,249,105,58,96,32,140,17
    5,76,182,175,169,0,133,144,32,81          <144>
211 DATA 163,169,8,32,180,255,169,111,32,1
    50,255,32,165,255,201,48,208,6,76         <144>
212 DATA 171,255,32,165,255,32,210,255,201
    ,13,208,246,32,171,255,104,104,32         <245>
213 DATA 188,175,76,31,174,169,13,32,195,2
    55,169,15,76,195,255,169,27,141           <132>
214 DATA 15,144,234,234,234,234,76,214,162
    ,58,82,87,77,88,64,114,174,172,174        <122>
215 DATA 172,174,72,174,197,175,133,175,85
    ,49,58,49,51,32,48,32,49,56,32,48         <217>
216 DATA 48,35,66,45,80,32,49,51,32,48,183 <031>
300 OPEN 1,8,15:CLOSE 1:IF ST=0 THEN 340      <249>
310 PRINT"BITTE FLOPPY ANSCHALTEN, DANN <S
    PACE> "                                   <169>
320 GET T$:IF T$<>" "THEN 320                 <140>
330 GOTO 300                                  <020>
340 OPEN 8,8,8,"@0:SMON.EX VC20,P,W"          <200>
350 PRINT#8,CHR$(0)CHR$(160);                 <144>
360 FOR I=0 TO 4090:READ A:P=P+A:PRINT#8,C
    HR$(A);:NEXT                              <150>
370 CLOSE 8                                   <183>
380 IF P<>523777 THEN PRINT"DATAS NICHT OK
    ":STOP                                    <000>
390 PRINT"DATAS OK"                           <079>
```

Listing. »SMON VC20« (Schluß)