CTSS Bulletin 69

Subject: New Version of MAD

Effective January 6, 1965, a new version of MAD will replace
the current version.   This new version will have the
following added features:

1.   A new statement
          INSERT   FILE   ALPHA
      will cause file ALPHA MAD   to be inserted in the
      compilation after the INSERT FILE statement.   Only
      one level of nesting depth of inserted files is
      allowed, although any number of INSERT statements may
      appear in the higher level program.

2.   An addition has been made to the '...' block notation
      in MAD.
      Formerly only the form
          A...B or A,...., B
      was allowed, where A and B are variables.   Now the
      second expression may be a constant, e.g.,
          A ... 7.
      See MAD Manual, November, 1963, page 16.

3.   A change has been made in MAD for defined operators.
      (See MAD Manual, November 1963, pages 100-112.)   This
      was needed due to the added feature of saving and
      restoring index registers 1,2 and 4 in functions.   The
      change was made to the ..RTN. operator. This is now a
      unary operator, i.e. only a B operand. The function of
      the B operand remains the same, that is, the address of
      the value to be returned to the calling program. The A
      operand is internally set to the address of the index
      restoring code. This address is designated "FF". Note
      the example on pages 110-111 of the manual.   This
      should be changed to the following:

              ..RTN.   This symbol, which is obviously invalid
          in a statement, stands for the operation of
          placing the appropriate value(s) in the arithmetic

register(s) and then returning from a function to its calling program. It is analogous to the right hand side of a substitution statement (the b operand) and then a transfer to a given address (there is no designation for this address within the triple). As such, there is no result. As an example, if the result of a function were a double precision number, say mode 5, the following would be a reasonable definition.

```
MODE    STRUCTURE   4,,RTN,5
JMP     *+3,BT,*+1
CLA     B
LDQ     B+1
TRA     FF
OUT     ACQ
END
```

The address FF is the address of the index restoring code.