JSON Parser in APL

Parser Combinators

```
_o  ← {0 ≥ ⊃ c a r ← p ← αα ω : p ⋄ 0 ≥ ⊃ c a r₂ ← p ← ωω ω : p ⋄ c a (r ↑⍨ - ⌊/ ≢¨ r r₂)}
_s  ← {0 < ⊃ c a r ← p ← αα ω : p ⋄ 0 < ⊃ c₂ a₂ r ← p ← ωω r : p ⋄ (c ⌈ c₂)(a, a₂) r}
_as ← {0 < ⊃ c a r ← αα ω : c a r ⋄ c (,⊂ωω a) r}
_t  ← {0 < ⊃ c a r ← αα ω : c a r ⋄ ωω a : c a r ⋄ 2 ⊖ ω}
_c  ← {(0 ≠ ≢ω) ∧ (⊃ω) ∊ αα : 0 (,⊃ω) (1 ↓ ω) ⋄ 2 ⊖ ω}
_ign ← {c a r ← αα ω ⋄ c ⊖ r}
_yes ← {0 ⊖ ω}
_opt ← {(αα _o _yes)ω}
_any ← {(αα _s ∇ _o _yes)ω}
_some ← {(αα _s (αα _any))ω}
_eat ← {0 (αα ↑ ω) (αα ↓ ω)}
```

BNF Grammar

```
value   ::= obj | arr | string | float
obj     ::= "{" [ members ] "}"
arr     ::= "[" [ values ] "]"
members ::= member {"," member}
member  ::= name ":" value
values  ::= value {"," value}
name    ::= "[a-zA-Z_][a-zA-Z0-9_]*"
float   ::= ^[-+]?[0-9]*\.?[0-9]+([eE][-+]?[0-9]+)?
string  ::= ".*"
```

```
q ← '"' _c _ign ⋄ d ← ⎕D _c ⋄ pm ← '-+' _c _opt ⋄ w ← (⎕UCS 9 10 13 32) _c _any _ign

lbrk ← w _s ('[' _c) _s w _ign  ⋄  rbrk ← w _s (']' _c) _s w _ign
lbrc ← w _s ('{' _c) _s w _ign  ⋄  rbrc ← w _s ('}' _c) _s w _ign

  string ← w _s q _s (1 _eat _t ('"' ≢ ⊃) _any) _s q _s w _as ⊢
   float ← w _s pm _s (d _any _s ('.' _c) _opt) _s (d _some) _s ('eE' _c _s pm _s (d _some) _opt) _s w _as ⍎
    Name ← string _t {(⊃ω) (∧≠ ∊ ∧ (⊃⊣) ∊ 10 ↓ ⊢) ⎕D, '_', ⎕UCS ,65 97 ∘.+ ⍳26}
  Values ← {(Value _s (w _s (',' _c) _s w _ign _s Value _any))ω}
  Member ← {(Name _s (w _s (':' _c) _s w _ign) _s Value _as ⊢)ω}
 Members ← Member _s (w _s (',' _c) _s w _ign _s Member _any)
   Array ← lbrk _s Values _s rbrk _as ⊢
  Object ← lbrc _s Members _s rbrc _as ↑
   Value ← string _o float _o Array _o Object
```

Example: 1 0 ⊃ *Value json*

```
json  ← '{', nl ← ⎕UCS 13
json ,← '  "contact": {', nl
json ,← '    "name": "First Last",', nl
json ,← '    "email" : "अध्यनाम.उपनाम@पृथ्वी.अ◌ाकाशगंगा",', nl
json ,← '    "address": {', nl
json ,← '      "street": "10 Market Road",', nl
json ,← '      "city"  : "Mumbai, MH",', nl
json ,← '      "country" : "भारत",', nl
json ,← '      "zip"   : 555555', nl
json ,← '    },', nl
json ,← '    "phone_numbers": [', nl
json ,← '      {"home" : "123 456-7890"},', nl
json ,← '      {"office" : "987 654-3210"},', nl
json ,← '      {"cell" : "222 444-6666"}', nl
json ,← '    ] ', nl
json ,← '  }', nl
json ,← '}', nl
```