THE ROLE OF PRIMARY AND SECONDARY PROCESSES IN CHILDREN'S CARTOON PREFERENCES

BY

© MARC F. BEAUDIN

A THESIS SUBMITTED TO THE FACULTY OF ARTS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY
LAKEHEAD UNIVERSITY
THUNDER BAY, ONTARIO

JUNE, 1982

Abstract

An experiment is reported in which the role of primary and secondary cognitive processes related to children's cartoon preferences was investigated. Twenty-four male children were administered the Rorschach, WISC-R, and also asked to indicate their preference for one of each set of fifty pairs of cartoons. WISC-R scores and primary process content percentages in Rorschach responses were correlated to the cartoon choice to find whether there were any significant relationships. It was hypothesized that there would be positive correlations of: 1) primary process content with the percentage of caricatures being selected; 2) primary process aggressive content with the percentage of aggressive caricatures chosen; 3) primary process libidinal content with the percentage of libidinal caricatures chosen; 4) children's WISC-R scores with the incongruity cartoons being selected. The results indicated support for hypothesis 4 which suggests that subjects who show better social judgement and verbal reasoning preferred the incongruity over caricature cartoons. The more knowledgeable subjects who had a better memory preferred the caricatures over the incongruity cartoons.

TABLE OF CONTENTS

List of Appendices

Acknowledgements

I would like to thank professors Taylor and McLeod who acted as immediate supervisors. The help of Mlle Tétrault, teacher at Peace Centennial School, B. Hopkins and C. Sordoni, psychologists at Lakehead Psychiatric Hospital, was greatly appreciated for making subjects available for this study. A note of thanks to Dr. Groves and professors Dilly and Evans who read and made helpful comments between revisions.

Introduction

Very few studies to date have been conducted to investigate personality factors in the child's appreciation of cartoon humour. Most of the early research was observational or quasi-experimental in nature. It consisted primarily of noting and recording manifest behaviors associated with humour. One such study was Haggard's (1941) who described a procedure using comic strip characters to evoke responses from children. One of the characteristics of the responses made by the children was the discrepancy between what they wanted the hero to do and the cartoonist's version of what he did. Haggard interpreted this "index of distortion" to reflect the degree to which a child has retreated into a private fantasy world as against having a realistic attitude toward his environment and interpersonal relations.

Using college students as subjects, Strothers, Barnett and Apostolakos (1954) objectively scored judgements of cartoons. Their results confirmed that cartoons do in fact have potential value as a projective technique. These authors remarked that the comic effect produced by their cartoons appeared to owe much to the release of repressed reactions in a socially acceptable way.

In a recent series of studies, Brodzinsky (1975,1977) has identified one cognitive style related to children's humour appreciation. Cognitive style is the manner or mode in which the child solves problems (Kagan and Kogan, 1970). The child's manner of approach is differentiated from his ability to resolve

the problems which is tied to intelligence and cognitive development. Cognitive styles represent dispositions that mediate the way individuals process information. They are thought to be relatively stable modes of adaptation that represent an interface between cognition and personality (Sigel and Brodzinsky, 1977).

Brodzinsky has shown evidence that children who adopt a reflective cognitive style are more likely to get the point of a joke spontaneously than are impulsive children. He also found that impulsive subjects showed the greatest mirth, particularly to cartoons containing aggression themes. In addition, he found that while humour comprehension decreased for all subjects in response to aggression cartoons, the decrease was significantly less for reflective subjects than for all other children. His findings suggested that while high levels of cartoon aggression distracted children from fully comprehending humour, the reflective child's cautious and detailed manner of responding overcame at least part of the distractive potency of aggressive material.

In the present study, two types of cartoon stimuli were presented to children. One type of cartoon used were caricatures with marked formal distortions which included tendentious content (i.e., morbid, sadistic or sexual features). The second set of cartoons consisted of more realistic visual representations than did the caricatures. This set also included a verbal cap-

tion which is incongruous with the visual depiction. This type of cartoon is appreciated more when the incongruities are found and connected (McGhee, 1971). The process of linking these incongruities is more abstract in nature than is the recognition of purely visual deviations in the caricatures.

The two types of cartoon stimuli were presented to children to investigate whether their preference for either one would reflect unrealistic and adaptive thinking. It is assumed that children who show a more primitive, unrealistic style of thought would show a preference for caricatures. They would probably enjoy the recognition of visual deformations and be more bound to them. They would probably not exercise the delay and concentration needed to go beyond the caricatures to resolve the incongruities. It is also assumed that the more impulsive childrens' formal deviations of thought and perception will be mirrored by the kind of caricatures they select, i.e., if the child has aggressive thoughts, he will prefer aggressive caricatures. Grziwok and Scodel (1955) found that adults displaying more fantasy aggression in a projective test preferred orectic humour as opposed to cognitive humour. This indicates a relationship between similar content, both in aggressive thought process and cartoon preference.

In contrast, children who are capable of more controlled and realistic thinking would probably enjoy the incongruity

cartoons more than the caricatures. Humour appreciation appears to depend on the match between the subject's developmental level and the cognitive demands placed upon him by the humour stimulus. Humour which is based upon a specific structural property is more likely to be appreciated by children who have just developed the cognitive skill necessary to understand the incongruity. It is more likely that children who show more adaptive cognitive functioning such as a higher degree of concentration might be less distracted by the caricatures and would be more disposed to recognize and resolve the abstract incongruities in the alternate set of cartoons.

The differences between the primitive, unrealistic cognitive style which will be referred to as the primary process and the controlled realistic cognitive style which will be called the secondary process will now be examined more specifically.

The Primary and Secondary Processes

Freud (1895/1950) first introduced the dichotomy between primary and secondary thought processes in his "Project for a Scientific Psychology" in the section entitled "Primary Processes: Sleep and Dreams". The two cognitive processes were then conceptualized in terms of a neuronal theory. Freud's (1900/1953) subsequent discussion of this topic appeared in "The Interpretation of Dreams" with the relevant section entitled "The Primary

and Secondary Processes: Repression". In this chapter, the formal distortions occuring in dreams exemplified the primary process mechanisms. Freud (1911/1959) later wrote two important papers on this subject called "Formulations on the Two Principles of Mental Functioning" and "The Unconscious" (1915/1959) in which further clarifications distinguished the two thought processes.

The primary process was then conceived as consisting of combinations of ideas which were determined by the fulfillment of some desire and was said to follow the pleasure principle. The secondary process, on the other hand, was seen as experimental thought which is adaptational to the demands of reality and was congruent with the reality principle.

Schafer (1954) gives us a good general description of the primary and secondary processes:

> "Secondary process thinking is predicated upon delay of immediate, direct, unmodulated discharge of impulses; it seeks such detours toward gratification as are appropriate to the individual's total prevailing life situation; it is selective and modulating. Also secondary process thinking is oriented toward reality and logic; it is reflective and forward-looking; it maintains the boundaries between self and nonself. Primary process thinking, in contrast, is indifferent to reality and logic and is organized around the vicissitudes of drives;

> it is oriented toward immediate, direct and uncontrolled discharge of impulse; it is fluid, indiscriminating, and unreflecting; it ignores relations of time, place, identity and causality. In addition, primary process thinking tends to fuse self and nonself, and it teems with condensation, displacements, physiognomic impressions and magical notions" (p.77).

In this description, Schafer places the primary and secondary processes as extremes of a cognitive continuum, with autistic primitive thought at the primary end and realistic adaptive thought at the other secondary end. According to this model, cognition can fall any place in between these two extremes. It should be remarked that primary and secondary cognitive styles are multidimentional and not equivalent to the impulsive - reflective cognitive styles referred to earlier. Not only does primary process thought have an impulsive tempo, it is also tinged with drive content and may result in formal deviations.

In his own analysis of the primary process Gill (1967) described the main formal deviations as condensation and displacement which we see in operation in dreams, jokes, neurotic and psychotic symptoms. He describes condensation as the process of fusion of two or more images or ideas resulting in a com-

posite figure that serves the purpose of laying special emphasis upon some common characteristic. He noted that displacement occurs either when something is expressed indirectly by allusion to something else, or by a shift in emphasis from an important to an unimportant element. Gill has argued that although primary and secondary processes are theoretically distinguishable, condensation and displacement should not be described as mechanisms of the primary process alone, since they are compromise formations expressing both cognitive processes. The product involving condensation and displacement must be a compromise formation expressing the interplay of inhibited and inhibiting forces.

Rapaport (1968) has made clear that the synthetic functions of the ego exist on all cognitive levels, even with the primitive systematization of the primary process. In condensation, the more distant and external the elements that are united (even opposites) the lower the synthetic form that can be expected to emerge. On the other hand, the more the differences are respected while establishing relationships, the more synthetic functioning approaches reality. In displacement, the shifts in emphasis might occur between close and internal associations or with more remote ones. Again, the more differences are simultaneously apprehended and integrated, the more differentiated the product will be.

The Cartoons

Kris and Gombrick (1952) first remarked how the form of the primary process underlies the creation of the caricature:

> "The psychologist has no difficulty in defining what the caricaturist has done. He is well acquainted with this double meaning, this transformation, ambiguity, and condensation. It is the primary process used in caricatures in the same way Freud has demonstrated it to be used in "wit"." (p.196)

The deformation of a realistic object by attaching primitive structures reflects an attempt by the cartoonist to ridicule. A character is portrayed with features exaggerated, a parody, which devaluates the content and travesties the form. The artist's ridicule is a moderately aggressive expression which avoids internal and external censorship by being presented in a morally and socially acceptable humourous content.

Ehrenzweig (1967) equates such formal deviations of the primary process with syncretism, a term used by Piaget (1956), referring to perception or reasoning which assimilates as a multitude of diverse things in a global structure. Just as dream work through condensation and displacement produces compromise formations, Ehrenzweig considers the positive function of syncretism to unite a structure in a single undifferentiated view. For example, the caricature can infringe upon the rules of

analytical perception and yet convincingly represent a face. In the creation of caricatures, Ehrenzweig views the activity of the primary process as being controlled. The cartoonist's focused attention and good gestalt is abandoned in order to provide material for elaboration by the primary process.

As in other primary process products such as dreams, the caricature is an expression of a compromise formation between realistic perception and primary process structures. The synthetic function of perception operates at a primitive level where deformations are permitted but the image is not completely distorted and remains recognizable. In order for this to occur, reciprocal interaction takes place between primary and secondary processes.

Caricatures fall within a category of cartoons which have been called "novelty" humour. Novelty humour consists of violations of visual expectancies, of stimulus elements in the cartoon which are physically discrepant from the subject's prior experience. A preoperational level of reasoning has been found to be necessary to identify the discrepancies depicted (McGhee, 1971). At the preoperational stage, the child is capable of symbolic functioning (Piaget, 1950) or has the ability to recognize identity or the lack of it in cartoons.

When appreciating the novel features of the caricature, the child appears to be relying on memory to summon the mental images

of past experience to compare it with its depicted deviations. The child has internalized the image which is needed as a standard of comparison to be able to distinguished its real form from the distorted one. Holt (1967) has pointed out that primitive cognitive functioning, such as the primary process, has its own peculiar systematization which must be developed in large part by the growth of the same structures that produce the successive versions of the secondary process. For example, he states that no meaningful language, not even a primitive one such as the primary process could be functioning during the first months of life when enactive thought occurs: that is, when thought is intimately tied to action and objects cannot be imaged separately from action on them. Only once the child has acquired object permanence (Piaget, 1950), the capacity to conceive of an object that is not immediately present in its perception, can the child re-experience a distinctive system of ideation with fluidity and primary process - like aspects.

If the child has acquired object permanence and internalized the image to recognize and appreciate novelty in humour, they can also recognize and appreciate the novel features of the caricature. The children at this stage are able to recognize meaningfully visual distortions such as condensation and displacement since these represent perceptual deviations from the operation of identity. In this case, we may consider these visual deviations as primary process manifestations proper to a preoperational level of cognition.

On commenting about the iconic or visual aspects of the primary process, Freud (1923) remarked:

> "Thinking in pictures is, therefore, only a very incomplete form of becoming conscious. In some way, too, it stands nearer to unconscious processes than does thinking in words, and it is unquestionably older than the latter both ontogenetically and phylogenetically." (p.21)

Bruner (1964) shares this view that during cognitive development, there occurs a transition between iconic and symbolic representation. In children between the ages of four and twelve, he finds that language shapes, augments, and even supersedes the child's earlier image forming system. He describes it as gradually integrating into more coherent and interconnecting acts, or as was termed earlier, into a higher level of synthetic functioning:

> "It has been the fashion, since Freud, to see delay of gratification as the principal dynamism behind this development - from primary process to secondary process, or from assimilation to accomodation, as Piaget would put it today. Without intending to question the depth of this insight, let me suggest that delay of immediate gratification, the ability to go beyond the moment, also depends upon technique, and again

> they are techniques of representation. Perhaps representation exclusively by imagery and perceptual organization has built into it one basic operation that ties it to the immediate present... Once language becomes a medium for the translation of experience, there is a progressive release from immediacy. For language, as we have commented, has the new and powerful features of remoteness and arbitrariness: It permits productive, combinational operations in the absence of what is represented. With this achievement, the child can delay gratification by virtue of representing to himself, what other possiblilities exist beyond the clue that is under his nose." (p.14)

The caricatures presented in this study were not represented with captions. To mimic iconic thought and correspond to the more primitive qualities of the primary process, the caricatures had to embody purely visual formal distortions. Freud (1916/1960) has shown that jokes can represent the primary process. The jokes' formal deviations, by their verbal nature, are more abstract and probably closer to conscious thinking than are caricatures.

Incongruity cartoons were used as the second set of humour stimuli presented to the children in the present study. All of the incongruity cartoons selected include a verbal caption that is

usually placed in an incongruous context by the cartoonist. McGhee (1971) defines incongruity cartoons as humour in which expectancy violations can only be understood at an abstract level. There are no stimulus elements in the cartoons which are visually discrepant from the child's prior experience.

As can be seen in Appendix B, cartoon number 62 depicts a woman being held back by firemen to prevent her from going back into a burning house. There is nothing visually unusual about this cartoon that the child cannot recognize. If the verbal caption had not been included in the cartoon, the reader might assume that she had the heroic intention of saving someone. What transforms this situation into a humorous one is her comment that she wants to go back to answer the phone, which is quite incongruous in the depicted disastrous context. As can be seen in Appendix B, the incongruity cartoons are even numbered and all share the same properties. In cartoon 28, there is a visual depiction of a man being knighted by a king. The caption reads, "I pronounce you loser." which is completely incongruous with the usual traditions of knighthood. Another example of such incongruity is cartoon 68, in which a speaker says he will reveal something in strict confidence to a hall full of people.

McGhee (1971) found that comprehension of abstract expectancy violations is positively related to the degree of acquisition of concrete operational thinking (Piaget, 1950). That is, the child

should be capable of conservation before being able to understand the contrast between discrepant elements in the cartoon. McGhee (1974), also remarked that as long as a child remains perceptually oriented as in the preoperational level, he would not have difficulty recognizing visual expectancy violations but would fail to understand the abstract incongruities in the cartoons. Since subjects selected for the present investigation should not exclude incongruity cartoons from their selection primarily from a lack of comprehension, they should be capable of reasoning at the level of concrete operations - e.g. understanding conservation concepts.

Schultz (1972) found that children have a tendency to identify an incongruity and then proceed to resolve it for each cartoon that they see. If the child was unable to discover the incongruity intended by the cartoonist, another incongruity was typically invented. If the resolution of the incongruity was not provided, the child would create another one.

Whether intended by the cartoonist or not, the discovery of an incongruity contributed a certain initial amount to the appreciation of the cartoon and the resolution of that incongruity contributed an additional amount of enjoyment. The children appeared to operate with the same cognitive structures but differed only in the amount of information which they used to identify and resolve the incongruities. Knowledge of the cartoon content is an important

factor in the appreciation of the incongruities.

McGhee (1975) found that fantasy processes play an important role in determining children's appreciation of incongruity cartoons. If the available cues surrounding the cartoon suggest that the situation is more reality - oriented and that the cognitive violation has occurred in reality, fantasy processes are not engaged in and the child sets out to try and understand the incongruity (see Suls, 1972).

When strong cues to fantasize are present, accomodation or reality - assimilation does not occur. The child does not experience difficulty in trying to change either his concept of conservation or identity to fit the new cartoon, he does not reality - assimilate the information. He merely assimilates the expectancy or conservation violations at a fantasy level. All the cartoons selected for the present study have fantasy cues, but they are more emphasised in the caricatures than they are in the reality - oriented images of the incongruities. Caricatures may be more easily fantasy - assimilated than will the incongruities.

As earlier quoted (p.11) Bruner (1964) equates a change from primary to secondary processes as a transition in cognition from assimilation to involve accomodation. Information from the caricature is incorporated into cognitive structures such as identity which are not readjusted as a function of the new cartoon. Since the caricatures are more likely to be more fantasy assimilated

than the incongruities, they will evoke more of an autistic or primary thought for their appreciation.

Bruner (1964) also remarked earlier that language permits productive combinatorial operations in the absence of what is concretely represented. It should be noted that combinatorial verbal operations include formal deviations which might nevertheless condense remote associations in an incongruous context. The result remains a primary process product which requires the abstract operation of conservation if the incongruities are to be recognized, connected and fully appreciated as humorous.

The Primary Process in Rorschach Responses

Since inkblots are visual stimuli that are ambiguous and varied enough to evoke and support almost any kind of image, they maximize primary process influences on perception. In the present study, the ten standard Rorschach inkblots were chosen for the purpose of finding whether some children project more primary process than others.

When subjects respond to the inkblots with highly self-expressive responses rather than with simple descriptions of popular images, they shift to a more autistic mode of thinking. Schafer (1954) discerned such shifts when the subject changed from "perceptual" to "interpretive" responses toward the inkblots. The change from "butterfly" on card V to a "stern old man" in

the red of card IX, denotes a shift from reality to fantasy. Such changes in content may also be accompanied by changes in other perceptual aspects of the response; it can change to a more original response, there can be variations in size and location, e.g., from the use of the whole inkblot to the use of a rarely used detail, and fluctuation in what determined the percept, from one response in which only form was used to one that was evoked by human movement.

Schafer (1954) remarked that remote, obscure and attenuated expressions of basic primary process influence the more autistic test responses. He found that images expressing infantile drives, conflicts and fears tend to contaminate those of relatively integrated, neutral, reality-reflecting character. Card I may elicit the image of an "evil hovering bat woman", rather than "a bat". These responses reflect the two ends of the primary and secondary process continuum, with the second response bearing the more neutral content. Another example, "animal" to the lateral pink on card VIII is mostly perceptual, but "snarling ravenous hungry wolf" to the same inkblot area, in addition to good perceptual form has in large part aggressive content.

Schafer (1954) listed a tentative categorization of content themes found in Rorschach responses which included: the oral-aggressive orientation, oral-receptive, anal, sado-masochistic, authoritarian, super-ego conflicts, weakness and

strength, masculine and feminine identification, attitude toward the parental role, negative self-identity, body narcissism, concern with reproduction, with aging and dying, and the emotional tone of the response. None of these responses were connected to specific psychopathology but considered to pertain to dynamic trends. Responses of the oral-receptive type for example implies a dependency trend in the personality.

Rapaport, Gill and Schafer (1968) found that the analysis of verbalization during Rorschach responding is the most crucial and frequently helpful procedure in the search for traces of autistic thinking. They considered the confabulatory response (DW), and the absurd response to represent prototypes of autistically distorted percepts.

The confabulatory response is one in which the person attributes to an entire inkblot a content based on only a portion of it. The thinking underlying this response is illogical and represents a type of autistic, magical thinking. It is evidence of transductive thinking (Piaget, 1950) i.e., reasoning which makes inferences about whole situations from experience with only a small and relatively discrete part. For example, card VI may be called "a cat" because the fine projections at the top look like "whiskers". The reasoning behind these responses may be: "If this looks like whiskers,

then it must be a cat." The subject reacts as if a clue was found concerning the real significance of the inkblot.

In the absurd response, no objective perceptual support is provided by the inkblot itself. The course of the associative processes is no longer regulated by the percept and too many of the person's subjective processes are involved in the creation of the response. An example of an absurd response is, "It isn't a shoelace, is it?" to card VII. This response is also unrealistic or autistic but here the reality of the inkblot itself becomes minimal in significance, and the content of the associative processes is overemphasized.

Holt (1956) was convinced that what Rapaport was getting at in his analysis of verbalization was in large part manifestations of the primary process. Holt's (1968) manual for primary process in Rorschach responses is an outgrowth of this scoring. In the present research, this operational measure of primary process was used to differentiate the children's Rorschach responses in distinct categories (see Appendix A). The ideational drive content of the primary process is divided into libidinal and aggressive variables.

The libidinal variables include such content as: Oral-"men, a little drunk over a punchbowl"; anal-"bug in a mudpuddle" or "a woman - here's one leg and her fanny"; sexual-"a bride and groom standing, holding hands"; exhibitionistic-voyeuristic-

"woman with a transparent dress on" or "a face, leering up at something; homosexual-"two people, I don't know if they're men or women" or "two men, holding ladies' handbags; and a miscellaneous libidinal category containing "ovaries", "embryo" or "cupid".

Holt (1956) distinguished different aggressive qualities and placed them in three categories: Attack, where the emphasis is on the aggressor rather than the victim, "bomb bursting" or "bull's face, charging"; the second emphasizing the victim, "animal stepping on fire" or "people falling downstairs"; and the final one for results of aggression, "dead chicken" or "blackened trees after a fire". This content is scored at two levels for the degree of drive expression. Level I involves more direct, intense, raw or blatant drive expression and is closer to the primary process. The more that drive expression described is socialized and discussion of it is appropriate for social communication, the more it is secondary and scored at level II. For example "an open mouth" is scorable as libidinal oral content at level I, but "two dogs kissing" although there is the same oral content is not as regressed and is assigned to level II. In the present study, separate percentages for the two levels of primary process content were not distinguished because of the very low incidence of level I responses given by the children.

Holt (1968) also took into account the peculiar formal characteristics of the primary process and included them as other dimensions of his scoring manual. The formal aspects of the primary process in the Rorschach include the main mechanisms of condensation, displacement, and symbolism.

The main aspect of condensation that can be found in the Rorschach is called image-fusion; the failure to keep images separated in the way demanded by a realistic view of the world. The fusion may come about when more than one idea arises with respect to a single area of the card and the subject fails to suppress all but one image. The internal and external view of something can be fused in a contamination e.g., "could be part of a woman's breasts with a bow in between...this might be the lungs...she might be wearing the bow around the neck." The fusion may also come about between adjacent areas when the subject has difficulty in delimiting a single percept. A fusion can occur between parts of two or more percepts which are combined to make a new hybrid creation or composition e.g., "a rabbit with bat's wings"; "dogs - kind of antennae for a tail."

In displacement, there is a shift of emphasis or interest from one mental content to another, usually to a less important content in terms of relevance to conflict or instinctual aims. In clang association for example the person responds to the inkblot by elaborating innappropriately with assonance to get

from one idea to another. The mechanism of symbolization is represented in the Rorschach by visual representation of the abstract. Color may be used to stand for an abstract idea as in the following: "two dogs - the red makes me think of violence".

Illogical thinking, which is tolerated in the primary process leads to affective contradictions: "witches - could be a diabolic dance or chanting their chants - a very pleasant picture - could be love and enjoyment"; or logical contradictions: "Pagoda god - a peaceful evilness" or contradictions of reality such as: "Mice - sitting back in armchairs with a cigarette". Nonsensical types of verbal associations are also scored such as "diaphragram", a verbal condensation for diagram and diaphragm.

A miscellaneous category was devised to score other formal distortions of perception and thought content such as the autistic logic involved in the confabulatory whole responses (DW) that Rapaport (1968) pointed out. One occasionally sees evidence of loosening in the conceptual organization of memory: "a bat - the winged bat, a bird, and I hate bats."

Control and defense variables, another aspect of Holt's primary process manual, were not scored in the present investigation since the incidence quality of content as such was of interest and not necessarily the attitude manifested toward it.

Rorschach responses which are placed in a humorouss context are placed in this section as defense.

As can be seen in Appendix C, Rorschach protocol number 18 has one response for card I which includes, "um, looks like a person like, with its eyes...". This response is scored L.2E.-V. as exhibitionist-voyeuristic primary process content and appears as the first score in the content column of the Rorschach Pri Pro (primary process) scoring sheet in Appendix C. Another scoring example can be found in Rorschach protocol number 7 in Appendix C in which one reponse for card I goes, "looks like somebody split in half with an ax". This response is scored Ag. IR as results of aggression on the Rorschach Pri Pro scoring sheet for protocol number 7 in Appendix C. The second column of the scoring sheet contains the formal aspects of primary process responses. For example, one response for card IV in protocol number 18 includes, "a jar with feet on it, like a cookie pot", an arbitrairy combination which is scored C-COl as a composition.

As can be seen on the Rorschach Pri Pro scoring sheet for protocol number 18 in Appendix C, the resulting primary process percentages (content = 24/48 = 50% and formal aspects = 9/48 =19%) represent the ratio of Rorschach responses containing primary process content or form to the total number of Rorschach responses. As can be seen on the bottom of the scoring sheet

(24 PPR/48 = 50% TPP) the total primary process percentages represent the ratio of responses with either primary process content or form, to the total number of Rorschach responses. The Rorschach primary process percentages can be found in table 1 of Appendix D.

The Rorschach protocols were scored by the experimenter under the supervision of H.N. McLeod, a registered psychologist with extensive experience in the traditional scoring procedure. A sample of Rorschach protocols scored by the experimenter were verified by V. Vezina, a doctoral candidate in psychology at Montreal University who received training in the Holt (1968) scoring method. The difference in primary process scoring for content and form between the experimenter and this second scorer was not significant since the protocols differed by only a few percentage scores.

As Holt (1968) states in his manual, primary process scoring does not imply nor require any particular type of style of administration, in the sense that it can be and has been applied to records taken by many different persons in a wide variety of ways. In this study, a formal inquiry for determinants of responses was not conducted; the experimenter occasionally asked for the location of a response when it was vague. Holt mentions that inquiry for location leads to records that are more easily scored but does not state it as necessary.

Emphasis was placed on the content analysis of responses, and where the percept was seen on the inkblot does not determine what it actually is. The experimenter observed that the percepts produced by the children were based on the inkblot stimuli presented. All the subjects involved in the study were non-psychotic and would not have responded with hallucinations or associated freely to objects in the office.

Using Holt's primary process variables, Stuart (1964) found political caricatures to bear more primary process content than other cartoons of the same historic periods. Holt's (1968) primary process and formal variables were also used for the selection of the caricatures in the present study. Caricatures and primary process percepts seen in the Rorschach inkblots can be considered isomorphic since they both share the same formal deviations and content themes.

In Appendix B can be found the caricatures odd-numbered in chronological order. The letters written on the caricatures refer to how each was classifed according to Holt's (1968) primary process content variables in Appendix A. For example, figures 21 and 35 demonstrate distorted human figures eating voraciously in an oral-receptive mode. Figures 1 and 3 represent distorted characters manifesting oral-aggressive content. Figure one represents a character which is an animal-man condensation who is about to devour whole a live fish-like creature. Figure

3 is another example of oral-aggressive content with fragmentation as formal deviation. The whole cartoon consists of a huge isolated mouth about to engulf a cat which is sitting on its tongue. Caricatures 55 and 69, although categorized generally under libidinal-sexual content are among those with anal burlesque content. The sexual phallic-genital content are present in the caricatures numbered 57 and 97.

The aggressive primary process content is divided in three aspects and are presented as such in the caricatures. Some cartoons show the subject of aggression attacking, whether a small child taking advantage of adults in number 25 or the child grown strong as portrayed in number 43, the caricature of Toulouse-Lautrec, who can now destroy a whole city. The object of aggression emphasizes the victim of hostility as shown in caricature 99 and sometimes manifested with a masochistic style as can be seen in caricature 73. Results of aggression are exemplified by caricatures 13 and 79 and these examples show the negative outcome of human intervention.

As mentioned earlier, it is assumed that the children who show more formal deviations of thought will prefer the caricatures. To verify this assumption, it was necessary to produce significant differences in the amount of primary process content shown by different subjects. Control of this independent personality variable was obtained by subject selection.

In order to obtain high and low amounts of primary process in the Rorschach protocols, subjects were selected from clinical and normal populations. Dudek (1975) found that with children from six to ten years of age, high levels of primary process appeared to be related only to negative personality qualities such as high levels of tension, anxiety and poor control of aggression. A large proportion of the subject sample included for study was therefore selected from a clinical population which is known to show such negative personality features.

Rivard and Dudek's (1977) analysis of primary process thinking of the same children at kindergarden level and grade four revealed that the amount of primary process thinking was relatively constant with development, with drive-related content increasing and formal deviations of thought decreasing in quality and type with age. In order to gain more variability in the kind of primary process responses produced, subjects with an age range of eight to twelve years were included in the present study. By including children with such a wide age span, both primary process content and formal deviations could be expected to be evoked by the inkblots.

The dependent variables in this study are the children's cartoon selection. It is anticipated that the greater incidence of primary process shown by the clinical subjects will be reflected by a greater selection of caricatures. From this idea, the

following hypotheses were formulated:

> Hypothesis 1. There will be a significant positive correlation between the percentage of primary process content and/or form in the children's Rorschach responses, with the percentage of caricatures they select.
>
> Hypothesis 2. Aggressive primary process content percentage scores from Rorschach responses will be significantly and positively correlated with the percentage of aggressive caricatures chosen.
>
> Hypothesis 3. Libidinal primary process content percentage scores from Rorschach responses will be significantly and positively correlated with the percentage of libidinal caricatures chosen.

The WISC-R was used to select subjects with a mental age of at least eight years so as to be sure that the children were intellectually capable of understanding the incongruity cartoons. The comprehension of abstract expectancy violations is positively related to the degree of acquisition of concrete operational thinking (McGhee, 1971) and the onset of conservation in thinking normally occurs at a chronological age of seven years (Piaget, 1950). A mental age of eight years was judged to be a conservative level to assure the subjects' comprehension of the incongruities. The mean mental age of the subject sample was over ten years.

Holt (1968) noted that the Rorschach is unsuitable as a test of adaptive processes and that multidimensional tests of abilities and adaptiveness like those of Wechsler should be used.

Sollee (1969), in an investigation with first and second grade children, found the WISC Vocabulary subtest and other verbal measures correlated (r = .70) with Piagetian conservation measures. Despite the different theoretic differences in the construction of the Piaget and WISC measures of intelligence, both appeared to sample cognitive processes that are significantly correlated (Dudek, Lester, Goldberg and Dyer, 1969).

A subtest-by-subtest analysis of the WISC-R was reviewed by Kaufman (1979), pointing out the unique abilities tapped by each subtest. Considering the verbal subtests, Kaufman found that: Information is often considered to measure the range of general factual knowledge; the Similarities subtest is associated with logical abstractive (categorical) thinking; Arithmetic reflects computational skill; Vocabulary shows the child's word knowledge and language development; Comprehension demonstrates the use of practical information and the evaluation and use of past experiences; Digit Span requires short-term auditory memory.

In the performance subtests, Kaufman (1979) recognised that Picture Completion was the only subtest reflecting visual alertness and visual recognition and indentification (long-term visual memory); Picture Arrangement requires anticipation of consequences as well as temporal sequencing and time concepts; in Block Design, the child must analyse the whole into component

parts, make use of non-verbal concept formation and spatial visualization; Object Assembly taps the ability to benefit from sensory-motor feedback, the anticipation of relationship among parts and flexibility.

In Kaufman's (1979) analysis of the WISC-R, he also points out that numerous abilities are shared among more than one subtest, e.g., Similarities is often considered to measure verbal concept formation, degree of abstract thinking, distinguishing essential from nonessential details, and logical abstractive thinking. The first two ability are also assessed by vocabulary, and distinguishing essential from nonessential details is measured as well by Picture Completion and Picture Arrangement.

The pattern of subtest scores from the WISC-R can also provide indices of the impairment of these adaptive processes. Schafer (1946) was the first to give various diagnostic suggestions for each subtest e.g., the extent to which Digit Span is impaired appears to indicate the presence and degree of anxiety. Another example is Block Design, in which depression is the most potent factor making for impairment of efficiency on this subtest.

The WISC-R was administered to all subjects and scored according to standard manual instructions (Wechsler, 1974). The experimenter conducted fifteen assessments with primary grade students and two with subjects from out-patient psychiatry. Five WISC-R profiles were obtained from psychologists working at the

psychiatric hospital and two from a school psychologist.

Since the appreciation of incongruity cartoons is related to an operational level of cognitive functioning we might expect children with more incongruity preferences to show relatively better performance on a test of secondary processes. A quantitative analysis of WISC-R subtest results should reflect less cognitive impairments with these subjects. The following hypothesis was therefore formulated:

> Hypothesis 4. There will be a significant and positive correlation between children's secondary process scores on the WISC-R, with the percentage of incongruity cartoons being selected.

Method

Subjects

Twenty-four male subjects with mental ages ranging from 8 to 12.6 years were selected for the study. As can be seen in table 1 of Appendix D, chronological age ranged from 8.5 to 13.6 years with their respective IQs ranging between 80 to 123. All the children who participated in the study came from middle-class families.

Fifteen subjects who did not manifest any kind of maladjustive behavior in primary school were selected as "normal" subjects. Thirteen students in grade level 3 to 8 were chosen from Peace Centennial School in Montreal and two were from Thunder Bay. The nine "clinical" subjects were selected from an out-patient group following psychotherapy for neurotic behavior disorders at the Lakehead Psychiatric Hospital in Thunder Bay.

Materials

The cartoons presented to each subject consisted of fifty incongruity and caricature pairs. The caricatures were illustrations by Ronald Searle chosen from a series of his books. The caricatures were chosen by the experimenter using Holt's (1968) variables for primary process content (see Appendix A). Various libidinal and aggressive themes are presented in the caricatures and distorted to a great degree (see Appendix B). The experimenter chose the

incongruity cartoons from various magazines and his selection was based on models furnished by McGhee (1971). The varying format of the original illustrations were reduced to $2\frac{1}{2}$" x $3\frac{1}{2}$" photocopies and glued on cards. The back of the cards were numbered for identification purposes.

A Sony TC-110B cassette audio-recorder was used to record the subjects' Rorschach responses.

Procedure

The experimenter placed each caricature and incongruity cartoon pair on the desk in front of the subject who was instructed to "choose the funnier one". The cartoon cards were kept in separate caricature and incongruity decks and were randomly shuffled before each presentation so as to eliminate any order effect. The subject was asked to read the identification number on the back of the cartoons chosen and to place the cards in respective caricature and incongruity piles. The experimenter wrote the card number chosen as they were read.

The cartoon series was verified to see if it consistently measured the subjects' cartoon preferences. The reliability of cartoon preferences was estimated using a sample of Lakehead University students. To be a reliable measure of cartoon preference, the students' cartoon selection had to remain consistent on different trials e.g., if one person selected 30% caricatures and 70% incongruities, these propor-

tions could not change significantly the second time.

The experimenter presented the standard ten inkblots to each individual subject who was asked "What do you see in this or what does this remind you of?". The child was permitted to respond to the inkblots.

The subjects' Rorschach responses were recorded and later transcribed (see number 18 and number 7 in Appendix C). The child was informed that the recording would be kept confidential. The Rorschach responses were scored according to Holt's (1968) method for obtaining percentages of primary process content and form (see Appendix C). The WISC-R was administered to the subject and scored according to the standard manual instructions (Wechsler, 1974).

Data Analysis

The secondary process measures were obtained from WISC-R full, verbal and performance IQs and scaled scores. Mental age was derived from the WISC-R protocols using the M.A. = I.Q. x C.A./100 equation.

A t-test was calculated to verify whether the clinical group had significantly more primary process responses than the school subjects. To verify whether the cartoon selection remained consistent on a second trial, Pearson's product-moment coefficient was used to see if the cartoon proportions of both trials were significantly correlated. Product-moment correlations were also calculated between the proportion of selected

caricatures and the percentage of primary process, since both are ratio measurements.

The relationship between WISC-R ordinal scores and incongruity cartoon proportions were tested using Spearman rank-order correlation. Pearson and Spearman Rho coefficients were calculated using the Statistical Package for the Social Sciences (SPSS) (Nie, et. al. 1975). The linear regression model was a good fit to the data since the scatter of the relationships were not curvilinear.

Results

The product-moment coefficient as an estimate of test-retest reliability for incongruity-caricature cartoon proportions selected by the university students was significant ($r=.79$, $P < .001$). Therefore, the cartoon series was a consistent dependent measure of humor preference.

There was significantly more primary process manifested in the Rorschach protocols of out-patient children (37 percent), than in the school group (22 percent) ($t=3.12$ (22), $P < .01$). Therefore, the significantly different amount of primary process functioned as an independent variable by selectively differentiating clinical from normal subjects.

No significant relationship was found between the children's total primary process content and/or form percentages in Rorschach responses and the proportion of caricatures chosen (see Appendix E). Therefore, hypothesis 1

was not supported. Aggressive primary process content percentage scores from Rorschach responses were not significantly correlated with the percentage of aggressive caricatures chosen. Libidinal primary process content percentage scores from Rorschach responses were not significantly correlated with the percentage of libidinal caricatures chosen. Therefore, hypotheses 2 and 3 were not confirmed. The data and correlations are presented in table 1 of Appendix D.

No general measure of intelligence derived from the WISC-R was found to be significantly related to cartoon preference. Rho correlations between mental age, verbal and performance I.Q.s and the frequency of choice of the incongruity cartoons were .075, -.304 and -.244, respectively.

More specifically, WISC-R comprehension subscale scores were positively correlated with choice of incongruity cartoons ($r = .345$, $P < .05$). Therefore, hypothesis 4, relating secondary process functioning on the WISC-R with the selection of incongruity cartoons, was supported. The children who received higher scores on the comprehension subscale also preferred resolving incongruities rather than the caricatures. In other words, the children who were more able to conceptualize, reason and express themselves appreciated and preferred the incongruity cartoons.

The WISC-R information subtest scores were positively correlated to the proportion of caricatures chosen ($r = .366$, $P < .05$).

Contrary to what was hypothesized, adaptive functioning on the WISC-R information subscale was significantly related to the preference for caricatures. Therefore, the subjects who had acquired more general knowledge and had a better memory to recall this fund of information also preferred the caricatures more than the incongruities.

Both comprehension and information subscales reflect an ability for verbal comprehension. During each of these two subtests, the children had to be receptive to the questions asked by the examiner. It should be noted that information and comprehension scores in this study were not significantly related measures (r=.052). Excluding digit span and mazes which were not administered, the other WISC-R subscale measures did not reach a significant level of relationship with the choice of cartoons.

Discussion

As was seen earlier, the children who were more knowledgeable, as measured by the Information subtest of the WISC-R, preferred the recognition of caricatures more than the processing of the incongruity cartoons. The Information subtest is a recall task which basically requires the retrieval of acquired information (Kaufman, 1979). The subjects who showed more preference for caricature cartoons therefore also had a stronger recollection ability.

The children who expressed more adaptive verbal reasoning and social judgement, as measured by the Comprehension subtest of the WISC-R, preferred the incongruity cartoons rather than the caricatures. The Comprehension subtest is a verbal reasoning task which requires problem solving (Kaufman, 1979). Therefore, the subjects who showed a marked preference for incongruity cartoons also had better verbal reasoning skills and better social judgement.

Information and Comprehension are both WISC-R subtests involving verbal comprehension, which is an indication that the subjects participating in this study could understand the simple instructions that were given by the experimenter. The subjects who preferred the caricatures not only performed well on the Information subtest but also had a tendency to do poorly on the Comprehension subscale. This pattern along with a low score on

Digit Span is usually typical of subjects displaying hysterical behavior (Schafer, 1946). The reverse pattern occured for the subjects preferring incongruity cartoons; they had a higher Comprehension score but usually had a lower Information score as well. This pattern of verbal achievement has often been encountered with subjects showing obsessional tendencies (Schafer, 1946). Data from the WISC-R suggest that the children with marked caricature preferences may have had hysterical tendencies and children with incongruity preferences may have been more obsessive in character.

The tendencies found with the WISC-R suggest that the childrens' fantasy thought might have determined in part their cartoon preferences. Singer (1961) found children who fantasize a great deal to have personality characteristics associated with obsessional tendencies and children with few fantasies to be more hysterical in character. Children with high incidence of fantasy thought may have preferred the caricatures, whereas children with fewer fantasies could possibly have shown preference for the incongruity cartoons.

If this assumption about fantasy thinking holds, then two clinical groups of children with hysterical and obsessive tendencies respectively, might have shown the Comprehension- Information patterns on the WISC-R and the incongruity- caricature cartoon preferences more distinctly dichotomized, than did the undifferentiated clinical and normal groups that were studied.

To verify if the assimilation of the cartoons could have been conditioned by the childrens' fantasy predispositions, a series of questions about their daydreaming and fantasy play patterns could have been asked (Singer, 1961). Further investigation in this area could be conducted to verify whether children who are more fantasy predisposed could more easily assimilate caricatures with marked fantasy cues.

Concerning the use of the Rorschach in this study, the thematic categories in Holt's manual were not designed to differentiate the primary process responses developmentally. For example, visual condensations might be differently categorised from the verbal ones but the resulting scores are an all-inclusive primary process measure. This lack of specificity in the primary process proportions might account for the non-significance of its relationship with the kind of comic distortion found in the cartoons. An arbitrary use of Holt's thematic variables could have been made to investigate more specifically whether iconic primary process correlated with the caricatures or whether the incidence of nondescriptive verbal primary process was related to a preference for incongruity cartoons.

Some of the caricatures had more explicit primary process content which could have created inhibition with some subjects. Defensive Rorschach responses could have been scored and correlated to the frequency of cartoon choices to find whether subjects who excluded caricatures from their choice also felt their

primary process responses to be threatening. The experimenter observed that none of the subjects actually reacted with aversion to the caricatures. All the cartoons were presented as humorous and the subjects often reacted with amusement.

It was hypothesized that preference for caricatures was related to primary process thinking which is more unconscious in nature. The children might not have been necessarily aware and able to explain why they preferred caricatures more than incongruities; they might have replied that they simply "like them more". A preoperational cognitive level is necessary for the comprehension of novelty types of humour such as caricatures. All the subjects had mental ages which by far exceeded this level (see Appendix D).

An apparent limitation of this study is that the level of comprehension of the different cartoons was not specifically established. It was determined from the start that subjects capable of preoperational thinking could appreciate caricatures and those capable of concrete operational thinking were able to solve incongruities. The incongruity cartoons used in this study were similar to models found in the research literature.

There is no doubt that some incongruities were more abstract than others. Some of them were harder to understand because of the social knowledge needed to resolve their incongruity. For example, in cartoon seventy, some subjects might not know what a letter to an editor is all about in comparison

to cartoon number sixty-two where we can safely assume that the use of a telephone is known by all the children. On the other hand, some of the incongruities may have been appreciated at a preoperational level for their visual humour, in the same way the caricatures were appreciated. The child may have created a personal incongruity in the cartoon and found that humorous. There was no way of knowing at what cognitive level the cartoons were appreciated.

Finding the exact cognitive level required for the comprehension of one hundred cartoons would have necessitated a separate research project in itself. The subjects could have been informed about the caricature content to verify if this would increase their appreciation and selection. In the same way, helping the children comprehend the lack of congruity in the cartoons may have shown evidence that comprehension enhanced their appreciation and selection. The subjects preferring the incongruity cartoons were not found to be more intelligent than the subjects showing more caricature preferences. It was not merely a question of general intelligence since the full I.Q.s or global performance and verbal scores of the WISC-R did not correlate with the frequency of selection of either caricatures or incongruity cartoons.

Comprehension of the incongruities was important since a lack of understanding for their discrepant elements could have biased the childrens' selection toward the caricatures. As can

be seen in Appendix D, none of the subjects in this study completely ignored the incongruities and their selection ranges from 2% to 86%. Analysis of the subjects' cartoon choice also reveals that all of the incongruities were selected with varying frequency and that although it cannot be certain that they were all understood by the subjects, we know that none of the incongruity cartoons were consistently put aside by the children.

The children did not find one cartoon type to be funnier than the other. As can be seen in the cartoon selection percentages column of Appendix D, there was a lot of variability in the children's selection of caricature or incongruity cartoons, which indicates that one type of cartoon was not preferred to the exclusion of the other.

The incongruity cartoons were not always neutral in content; a couple of these cartoons contained qualities in common with the caricatures. For example, "it was the alcool talking" in cartoon number 46 is an incongruity with oral and aggressive content. Some of the incongruity cartoons also depicted characters that were distorted, although not to the same degree as the caricatures.

The appreciation of incongruity cartoons may have taken longer than the caricatures because they required the children to go beyond the visual features to consider the incongruities themselves. On the other hand, it may have taken as long for

the children to appreciate some of the caricatures because it is hard to tell what goes on in them. To determine exactly if the subjects who preferred the caricatures were also impulsive, it would have been necessary to measure their reaction time to to initial responses to the inkblots and the time they took to make their cartoon selections. Whatever the reasoning behind the cartoon appreciation, the subjects' cartoon preferences - as shown by their final selection, was what was sought in this study.

Autistic cognitive processes do not appear to take part in the appreciation of cartoon humour, whether it is a caricature or not. Unrealistic cognition might have been evoked by a creative task rather than the appreciation of cartoon stimuli. For example, the caricatures could have been used for story production. Since the caricatures display very evident fantasy cues, they may have evoked more primary process thought than the more realistic representations usually found in apperceptive cards. Another technique that would have probably evoked primary process is requesting the drawing of the caricature itself instead of the usual human figure drawing.

Appendix A

Summary of Holt's Primary Process Variables*

Content Variables

L. Libidinal

L.O. Oral receptive
the content of this kind of response includes reference to food, eating, chewing; mouth, lips, tongue and breasts are scored when emphasized; stomach, the use of alcohol; smoking and drinking, cooking, etc.

L.O-Ag. Oral Aggressive
is scored when teeth and jaws are seen; biting, beaks, poison, animals feared for their biting; cursing, spitting ...

L.A. Anal
content includes buttocks or corresponding region; intestines, toilet, tail of animal, disgust, dirt, suppository

L.S. Sexual phallic
reference to genital sexuality; kissing, virginity, symbols of romance; woman's legs (given by man) ...

L.E-V. Exhibitionistic-voyeuristic
nudity, underwear, peering, looking emphasized or eyes in isolation ...

L.H. Homosexual
reversing usual sexual identity of a figure or sexual organ or seeing mixed sexual characteristics on the same figure; transvestism, sublimated homosexual acts ...

L.M. Miscellaneous
internal sexual anatomy, embryo, fetus, pregnancy, urinary anatomy, narcissism ...

Ag. Aggressive

Ag.A. Attack
content of response includes aggressive acts; feelings or events such as: explosions, fire, fighting, hostile acts where the victim is not specified; frightening creatures of childhood fairy tale and fantasy; skeletons in a threatening context ...

Ag.V. Victim of aggression
people or animals in pain, suffering, illness, frightened or threatened persons or animals; figures or objects in states of precarious balance; defensive objects or activities

Ag.R. Results of aggression
deformed or injured persons or animals; monsters in the medical sense; persons or animals with parts missing; blood, death, decayed or rotten plants or objects, aftermath of fires or explosions ...

Formal Variables
(Formal aspects of Content)

C. Condensation

C-ctm Contamination
overlapping images of seperate objects, persons, etc., are fused into a single percept; fusion of two mutually exclusive views of the same thing (ex. both external and internal views of a body)

C-ctgn Contagion
loss of boundary between self and percept ("the man looks sad. I feel like crying when I see that - please take it away")

C-int Interpenetration
partial fusion of two seperate percepts, which may be seen in the same area, the person is unable to decide between them; preference for one percept is expressed but the person is unable to relinquish the other; interpenetration of ideas without image ("Land and water... although I can't get away from the lady in the middle, I mean I see her at the same time and yet she isn't in this picture of water but the shadings looks like waves of water".)

C-co Composition
(level 1) impossible fusions, hybrid organism; improbable fusions ("a two-headed lobster"); percept of a face with parts organized in an unrealistic way
(level 2) composite images that actually exist in mythology, art, folklore; realistic fusions of seperate organisms (Siamese twins")

C-a-c Arbitrary combinations of seperate percepts
two seperate but contiguous percepts are placed in some kind of meaning relationship that violates reality. Responses that might be acceptable if kept seperate are reported as being in impossible, or implausible but possible, combinations. ("A prairie dog climbing on a butterfly" or "two animals holding a bridge in their mouth") Also scored here are arbitrary linkages, in which the underlying assumption seems to be: two areas of the blot are touching, therefore they cannot be seperated ("some sort of flying animal- held back by this mass here, because it seems attached".)

C-arb Arbitrary combination of color and form
scored whether given without criticism or recognition of incongruity ("red bears"), or given with spontaneous criticism or negation ("a sheep- I don't know why it should be green, but it is").

C-arb Rationalized inappropriate color
person mentions a color that is unatural for the percept described, even though rationalized more or less convincingly ("a man with pink paint all over his head")

D. <u>Displacement</u>

D-chain Chain association
fluid associative thinking, going from one idea to another without the overall guidance of an organizing set or anticipation. ("... the damn lines aren't regular on it. It's just not regular, Doc. I'm a regular guy -sings: Here comes that guy; I'm going to have them work on my teeth today..."

D-dist Distant association
nonsense, or inappropriate elaboration; person strays off the point according to some loose principle other than clang association ("Blood of a rabbit; here's his paws- the rabbit's name is George; a woman's vagina- what we all try to bow to; I'm not certain if that is a crawfish or shrimp but we do know this that they are cold-blooded and I don't think they feel because they are cold-blooded...")

D-clang Clang association
assonance is used to get from one idea to another ("I can show it to you if you're still in a mind to listen. Listen, listen, cat a-pissin, where you at, under the chair;... she's launching this creature on some mission, missile

perhaps. ? Maybe I connected it with the fact that he looks launched, missile. Mission does relate to missile, doesn't it?")

D-clang Puns and malapropism
(level 2) substitution of one word by another of similar sound or a homonym, often with humorous intent (in which case score Cx-H) ("Looks like a bat- Bat Masterson- laughs")

D-fig Figures of speech
metaphor, hyperbole, or inappropriate simile, but scored only if idiosyncratic or unusual enough to attract notice the metaphor ("He would be a tiger if enraged") assertion of an unreal identity; Hyperbole ("There are millions of insects here") great exaggeration for the sake of emphasis; Inappropriate simile ("A vagina...burst...and drops, like a volcano.") assertion of an unrealistic or incomprehensible similarity.

D-time Displacement in time
inappropriate or impossible introduction of an attribute, activity, etc. from a different era of time than the one implied by the rest of the response ("two knights, taking off their helmets for a cigarette").

Sym <u>Explicit symbolism</u>

Sym-C Color or shading symbolism, idiosyncratic
the term "symbol" must be used, or a close synonym ("the red denotes strength toward evil"); also physiognomic or synaesthetic responses ("a concert- the colorfulness and weirdness")

Sym-C Color or shading symbolism, conventional
stereotyped conventional meanings of color ("green with envy") (level 2)

Sym-S Spatial symbolism
use of spatial relations between blot areas to stand for an abstract idea or attribute that is not directly pictured ("Intercourse- or union- I didn't think of a specific picture, everything is just united")

Sym-I Image symbolism, idiosyncratic
use of an idiosyncratic concrete image to stand for an abstract idea ("the spots outside represent thoughts in his head")

Sym-I Image symbolism, conventional
(level 2) the symbolic equivalence is cited by the subject, not made up by him ("explosion- could represent anger" or "the bow gives it a feminine touch")

Ctr Contradiction

Ctr-A Affective contradiction
the person indicates that he experiences contradictory affects simultaneously; affective fluidity; inappropriate affect ("Fu Manchu- that's pretty, he's disemboweled himself")

Ctr-L Logical contradiction
mutually incompatible qualities, activities, or attributes are assigned to a single percept; the person both asserts and denies something about the blot or response, contradicting himself ("An old fellow sleeping- mouth, nose, playing with a piece of driftwood")

Ctr-R Contradiction of reality
deliberate molding of the blot's reality ("I make the picture into what I want it to be- it looks sunny but I want it to be cloudy, so I see it that way")

Ctr-R Contradiction of reality (less serious)
people or animals are seen with impossible, unlikely, or innappropriate attributes or activities ("headless man conducting an orchestra" or "mice with pensive look")

V Verbalization scores

V-I Verbal incoherence
the course of thought is extremely autistic, resulting in a use of words that fails to communicate and becomes incoherent ("a bundle of love, how do you like that for an answer, wrapped up in endearing young charms")

V-C Verbal condensations
portmanteau words or phrases in which the condensed elements are discernible; neologisms in which condensation is not evident ("chest-monks" or "a batterfly")

V-Q Queer verbalizations
psychotic distortions of usage, failure to maintain appropriate set ("a twat- I don't get the same sensation as if it were real" or "a crab, I was hoping for an octopus")

V-P Peculiar verbalizations
linguistic usage that is autistic enough to sound odd although the meaning may be quickly understood ("a fine dog- noblest of all dogs" or "something of a heart muscle, reposed, or cut in the middle")

V-S Verbal slips
slips of the tongue ("two ants holding up a stick... they are saving the other people in the ant hole... (People?) Oh, I meant ants")

Miscellaneous distortion of thought and perception

Au Lg Autistic logic
responses are cast in a fallacious syllogistic form ("everything's so small it must be the insectual kind of thing"); autistic aspects of the reasoning may result from a blending of both concrete and abstract meanings of words ("A head, sort of idiotic person... just blank, no features, sort of an empty head") here, "empty" is used simultaneously to represent an idiot and also the blankness of the face seen in the card; reasoning on a positional basis ("North pole, because it was at the top"); generalization or jumping to conclusions about the identity on the sole basis of a minor part (confabulatory whole respose- "a cat, because of the fine projections at the top look like whiskers") the reasoning behind the response may be "If this looks like whiskers, then it must be a cat"

M L Memory loosening
a factual error made by someone who can be presumed to know the correct information ("a scotty poodle" or "bat, the winged bat, a bird, and I hate bats")

Intr Intrusion of irrelevancy
an irrelevant idea suddenly inserted into the record ("a vampire bat. What the hell is my I.Q.?"); person replies tangentially and unresponsively ("/What made it look like fur?/ Here are four wonderful faces")

Un Rel Unrealistic relationships
the person sees an unrealistic relationship between blots ("the butterfly of the previous picture again")

Trans Fluid transformation of percept
the person describes an experience in which one thing turns into another under his very eyes, so to speak ("An Indian with a hide over him... Now he's beginning to transform as his hide droops down, it becomes two enormous feet".)

S-R Self-reference (of a magically unrealistic kind)
indications that the person feels the test or the thing seen has reference to him personally ("an arrow being shot at me")

Au El Autistic elaboration
(level 2) inappropriately thematic elaborations that does not become bizarrely unrealistic ("two bunnies, looking at each other. They've noticed each other and turned their heads to look at each other up and down, as if to say, Well, who are you? And soon they'll scamper on about their business, wondering where the other came from")

Impr Impressionistic response
the respose is given as a feeling or an impression ("something belonging to an aquarium, that's the feeling I get (?) Color- green, and also middle part- colors fading into one another") or abstract movement responses ("This top part has a forward motion to it (?) part of it has two curved lines coming together at a point. They convey motion...")

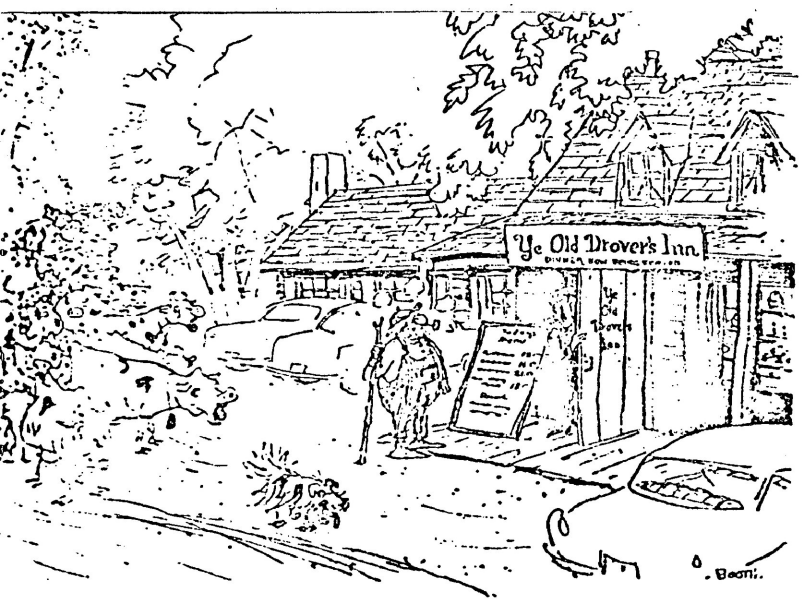
Do Fragmentation
only a part is reported where most people see a whole percept ("cat's whiskers- usual card VII)

F-msc Miscellaneous formal deviations
perseveration- the third appearance and subsequent ones of essentially the same content and poor form level ("Here's that same butterfly again, only now it's in full flight" -preceded by butterflies on two cards); taking the blot as reality ("A pelvis... I was surprised to find a human pelvis looks that way"); a physiognomic response to a property of the blot as reality other than color ("it looks like a protocol, or an announcement, because it has a flourish to its structure")

* Holt, R.R., Manual for the scoring of primary process manifestations in Rorschach responses. Mimeograph (10 rev. ed.). New York: Research Center for Mental Health, New York University, 1968.

Appendix B

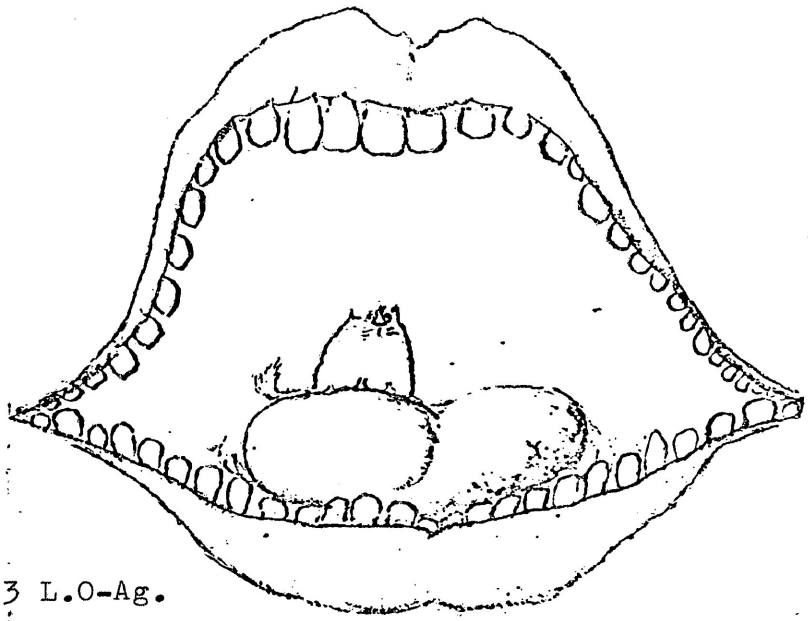
Primary and Secondary Cartoon Content



2 "Do you have a dinner jacket, sir?"

1 L.O-Ag.

I saw Grace Dworthman, Alice Parsons, and Mildred Livingston today. They all send you their love." 4

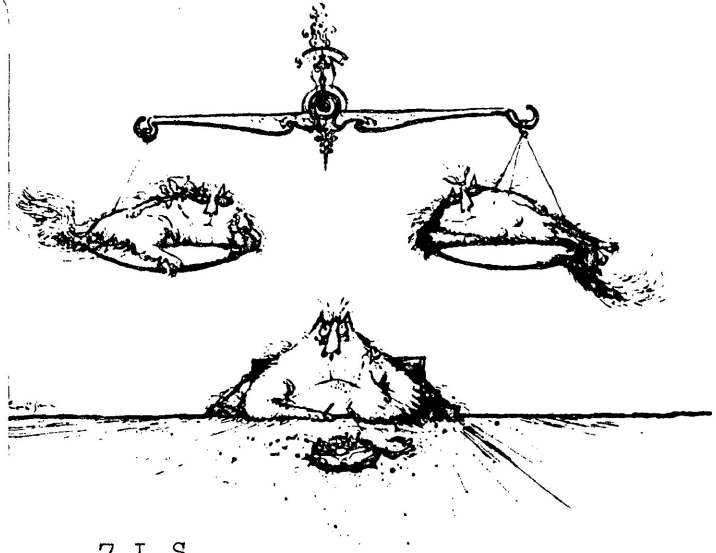


3 L.O-Ag.

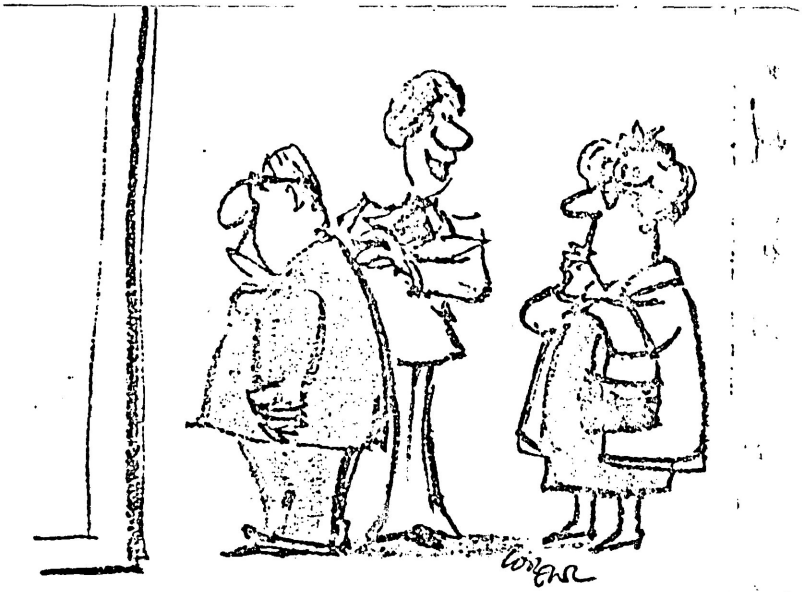
Oh, come off it, Methuselah! Seven hundred and eighty-two isn't old!" 6

5 L.S.

"I may not be right, but, by God, that doesn't mean I'm wrong." 8

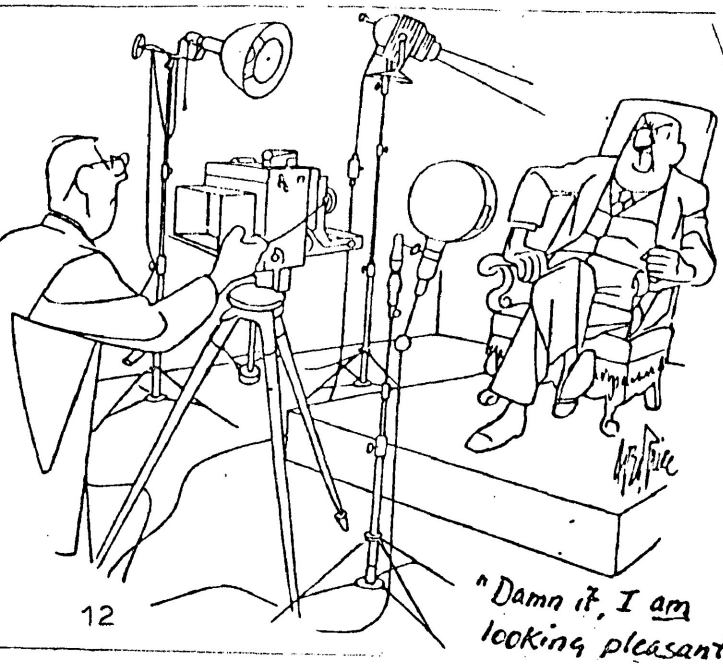


7 L.S.

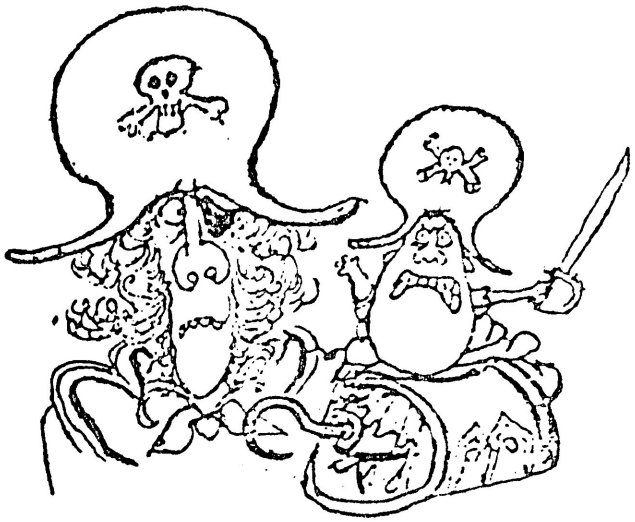


"It's a blend of carefree Orlon and lighthearted polyester." 10

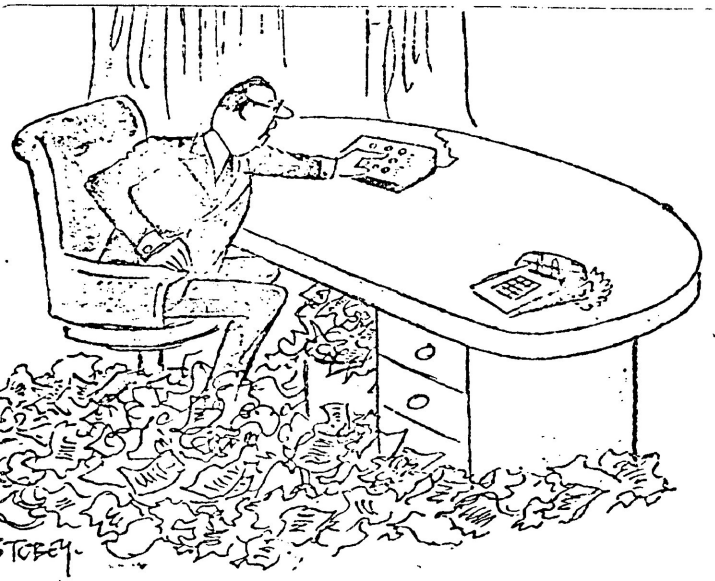
9 Ag.Ob.



12 "Damn it, I am looking pleasant!"

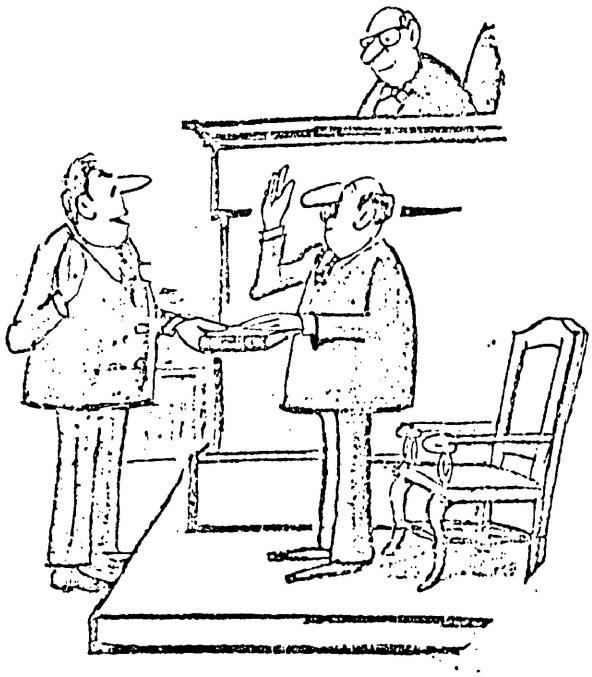


11 Ag.S.



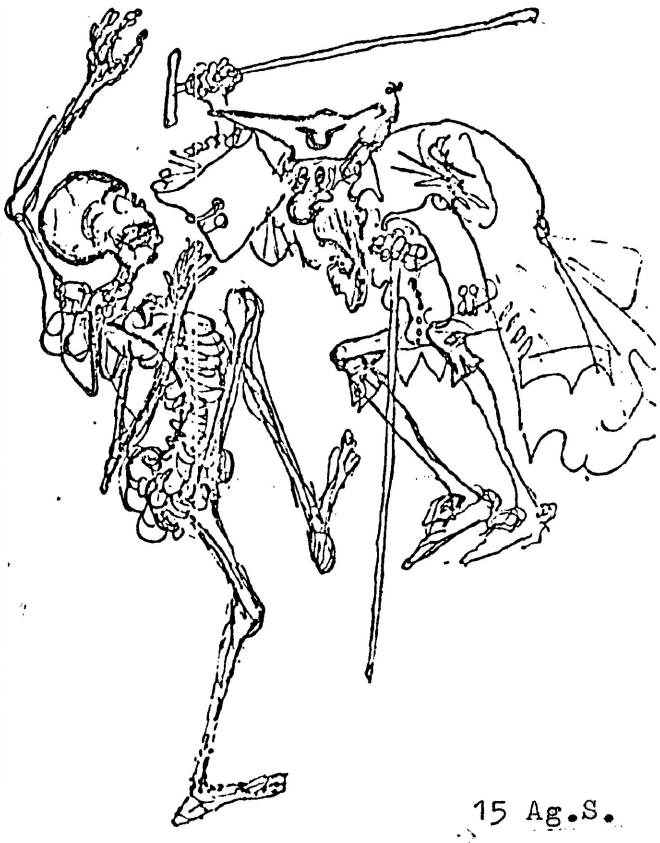
"Miss Craig, I've cleaned up my desk. I am now going to lunch." 14

13 Ag.R.

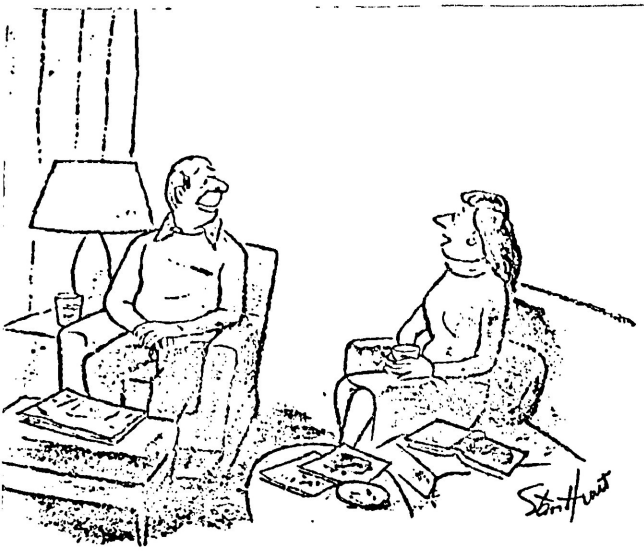


16

"Do you swear to tell the truth, the whole truth, and nothing but the truth, as you see it?"

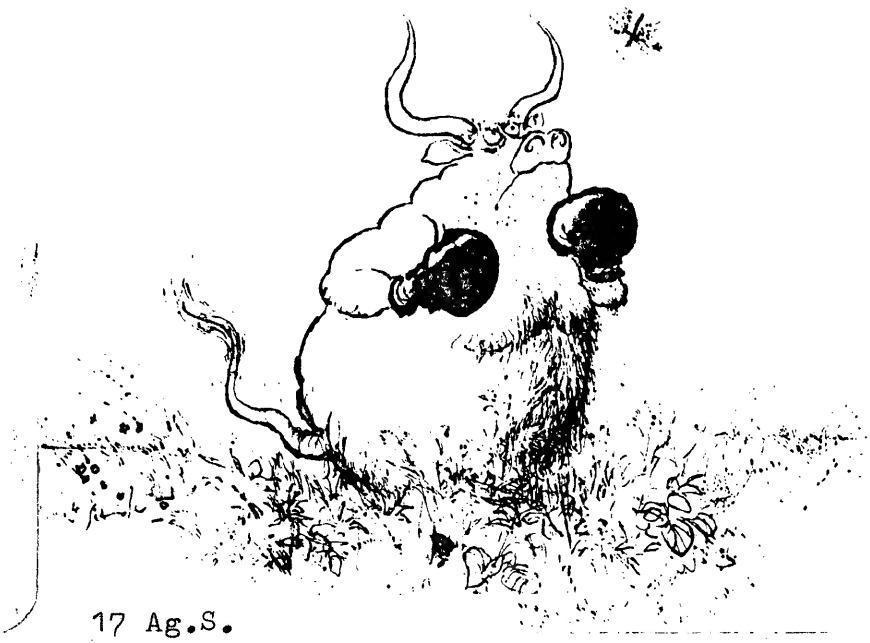


15 Ag.S.



"Gee, Walter, I think it's great the way you bear it. I just wish sometimes you wouldn't try to grin and bear it."

18



17 Ag.S.

20

Dear Aunt Dorothy Thank you very much for
e nice record for my birthday. It's the
rst time I've ever heard a whale sing."

19 L.S.

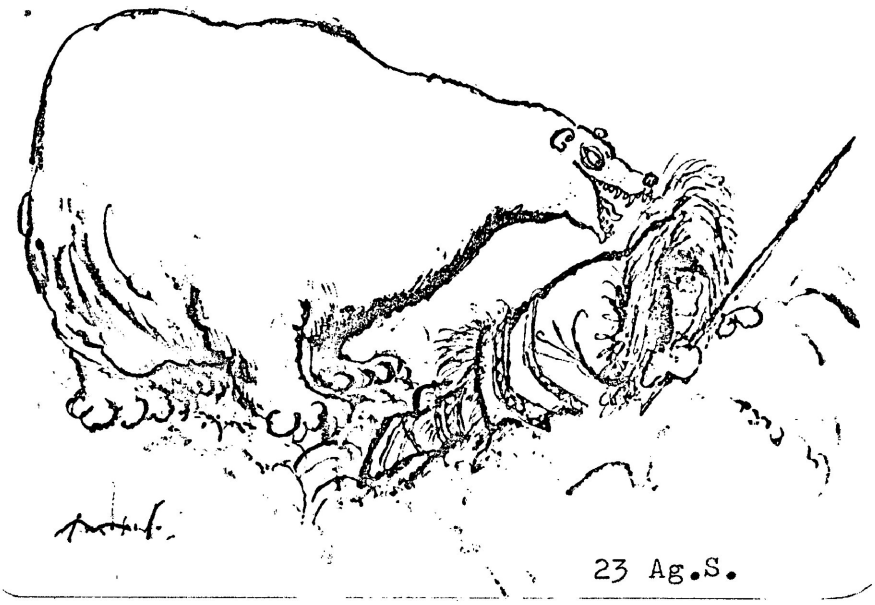
"Hey, I'm thirsty. I need a drink. A drink and a liverwurst sandwich. Hey, how about a sandwich and a beer down at Gallagher's, and then we can go shoot some pool? Or maybe take in a movie. Hey, I'm talking to you."

22

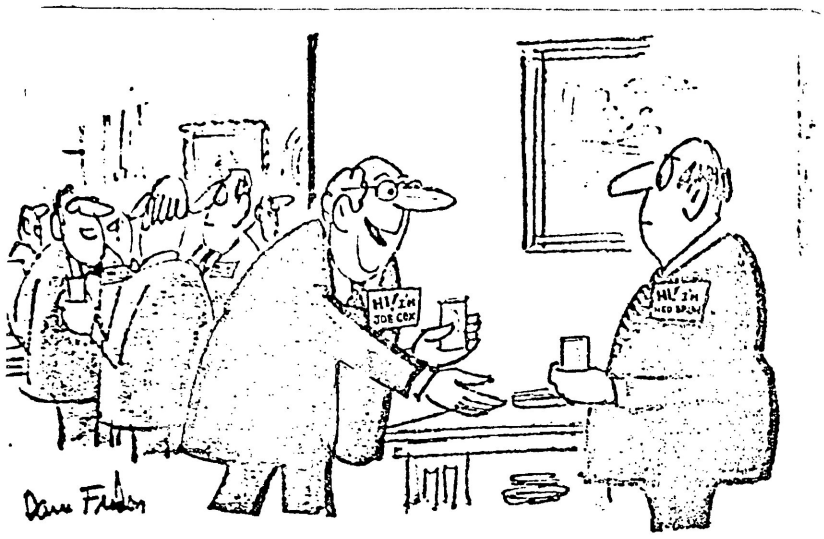
21 L.O-R.

"Ah! What a glorious day to be dead!"

24

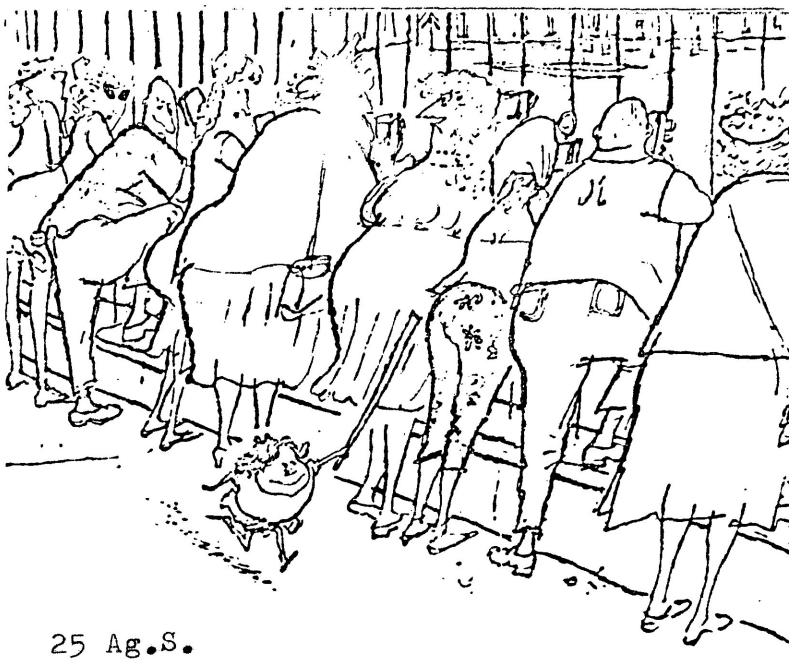


23 Ag.S.



"Hi! I'm Marty Clark."

26

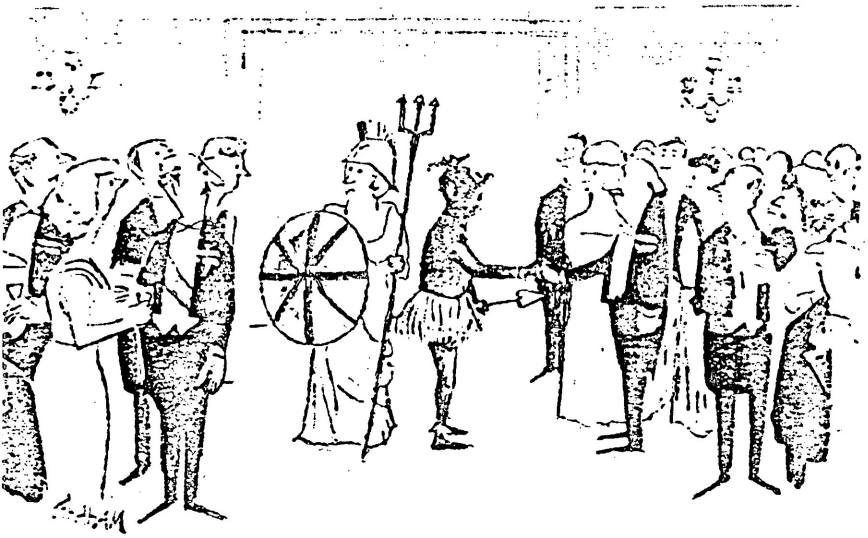


25 Ag.S.

28

"I pronounce you loser."

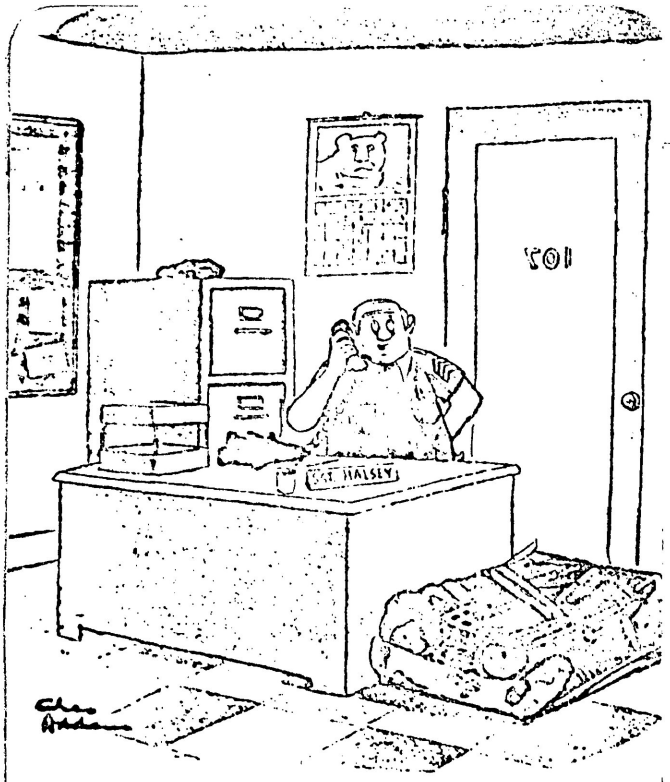
27 L.E-V.



fear we must have misread the invitation."

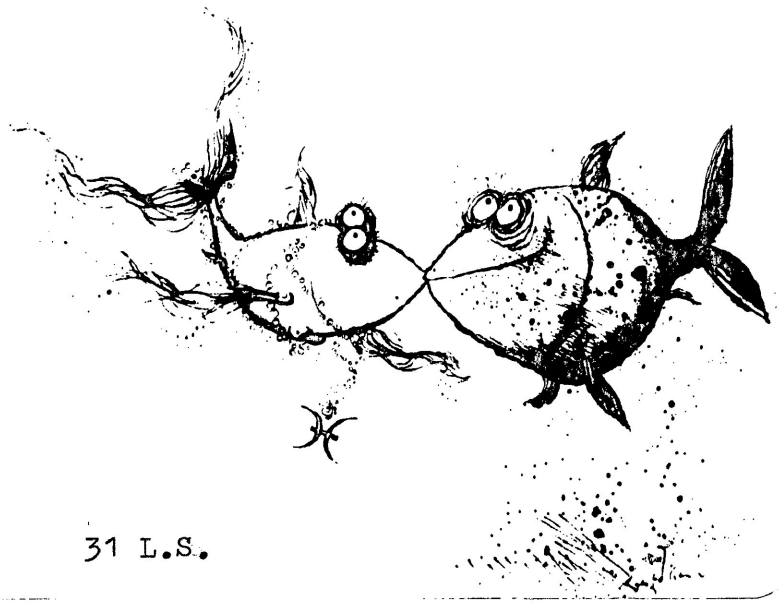
30

29 L.E-V.



"Mrs. Wilson? I think you'll be happy to hear we've recovered your stolen car."

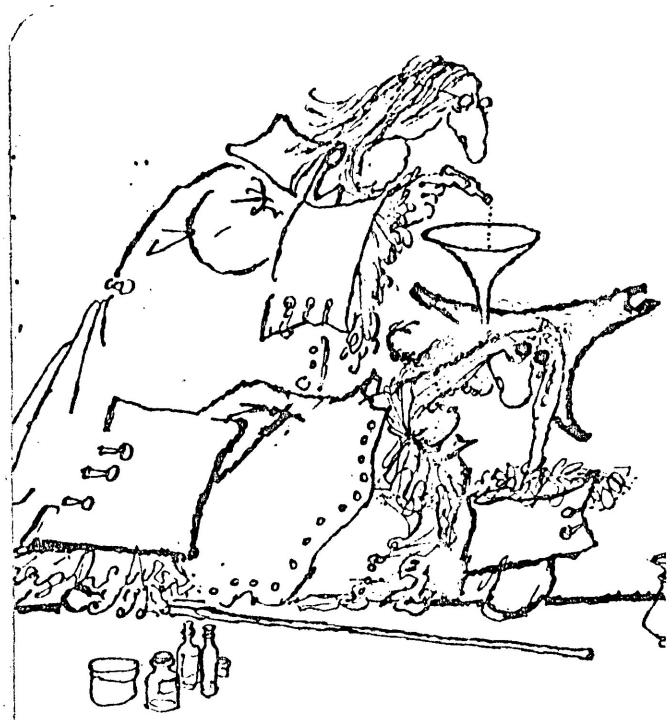
32



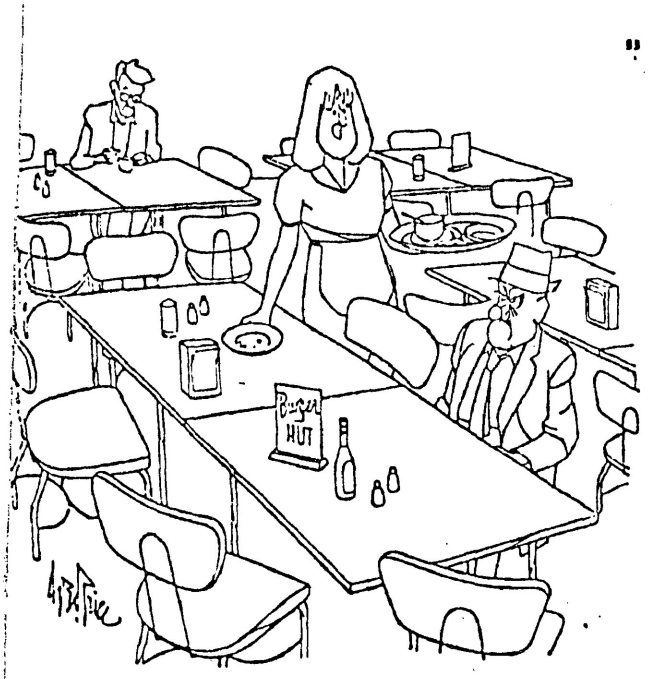
31 L.S.

"That's funny. I came down here to get away by myself, too."

34



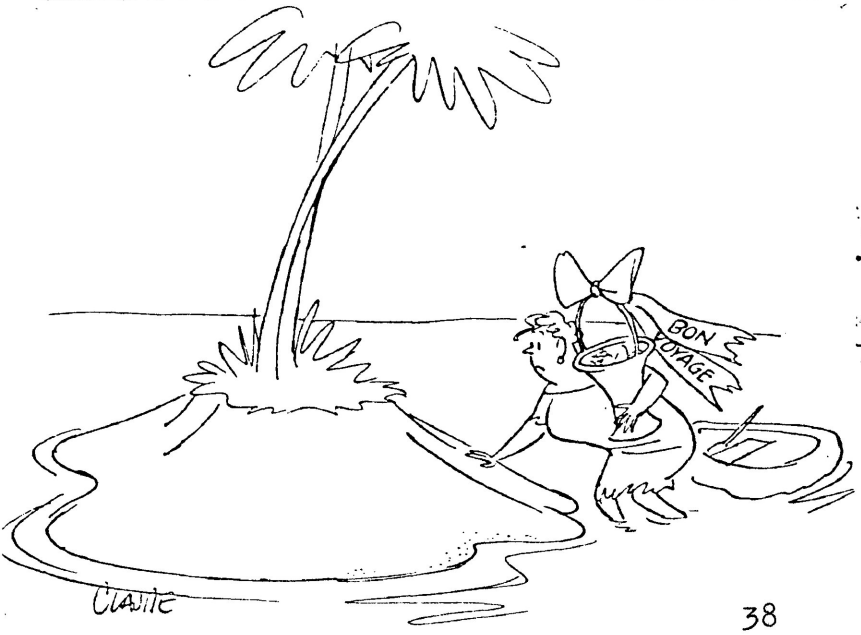
33 Ag.O.



36

"It won't be long now, sir. the kitchen is a beehive of activity."

35 L.O-R.



38

37 L.S.

"Could you spare a twenty to restring my tennis racquet?"

40

39 Ag.S.

"He does."

42

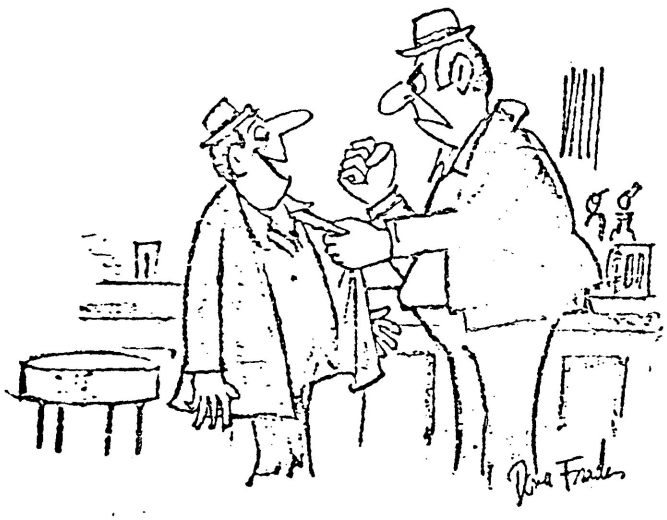
41 L.E-V.

"Who the hell do you think you're kidding?"

44

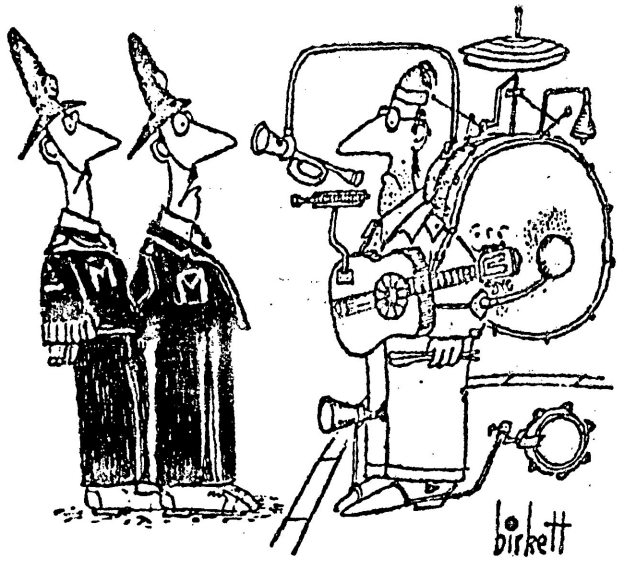
43 Ag.S.

46



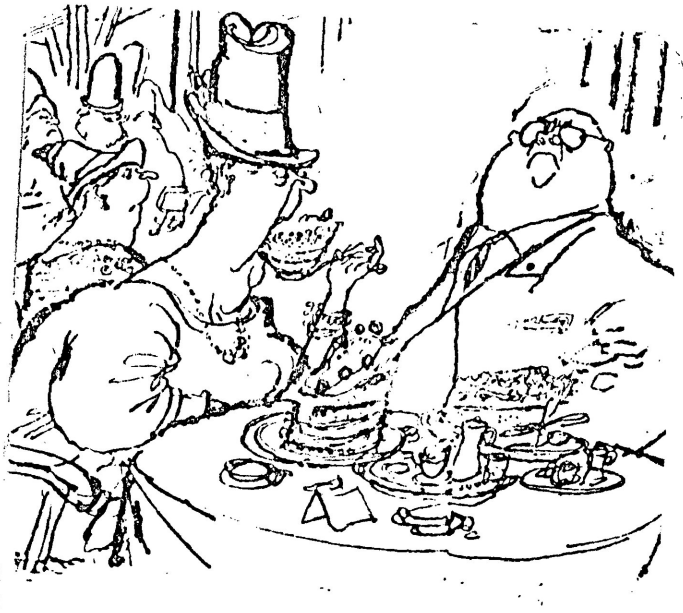
"Oh, that wasn't me talking. It was the alcohol talking."

45 Ag.S.



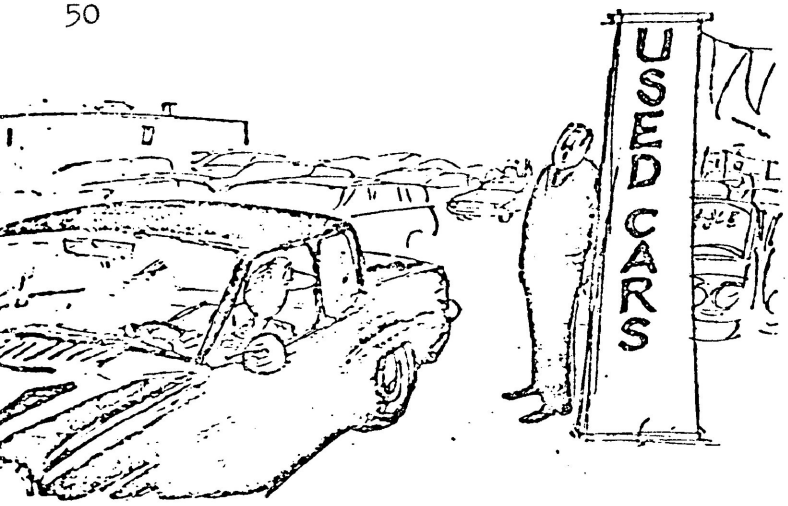
"The game's up Farnsworth — are you coming quietly?"

48



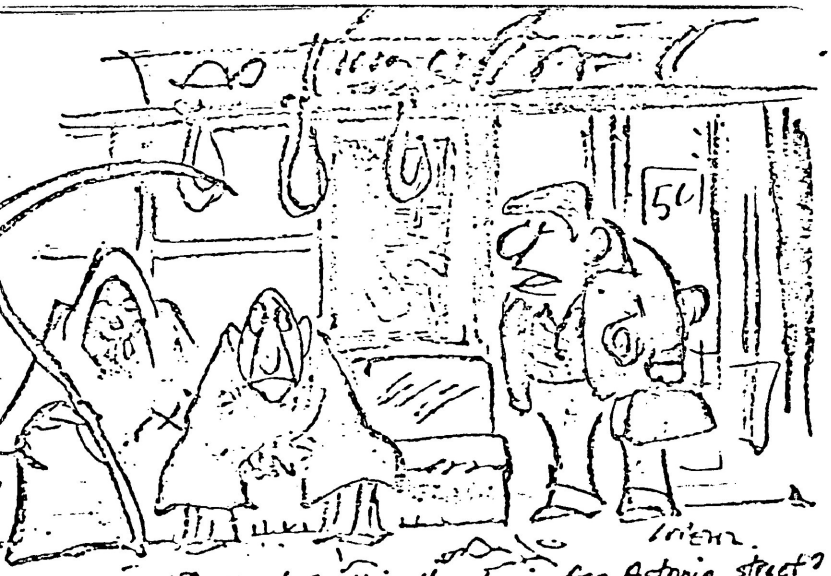
47 L.O-Ag.

50



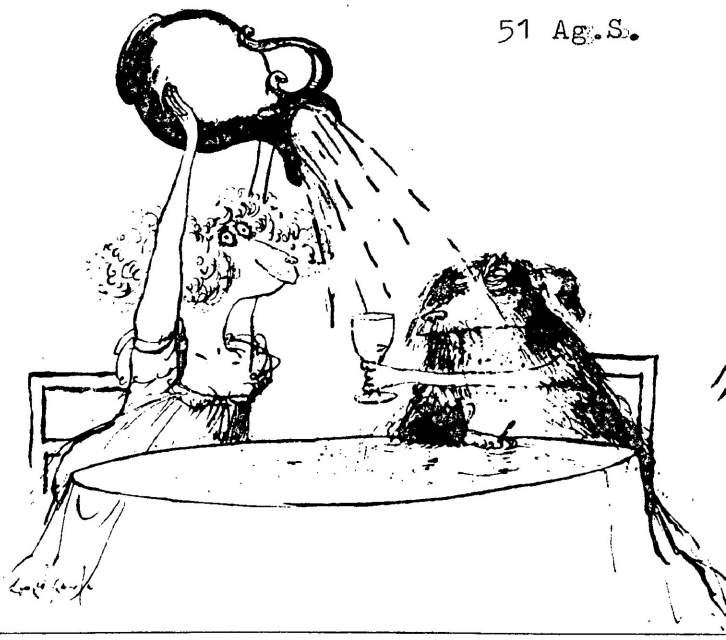
f it gives you any trouble, don't let us know. We hate trouble

49 L.S.



52 Hey Mac! Is this the train for Astoria street?

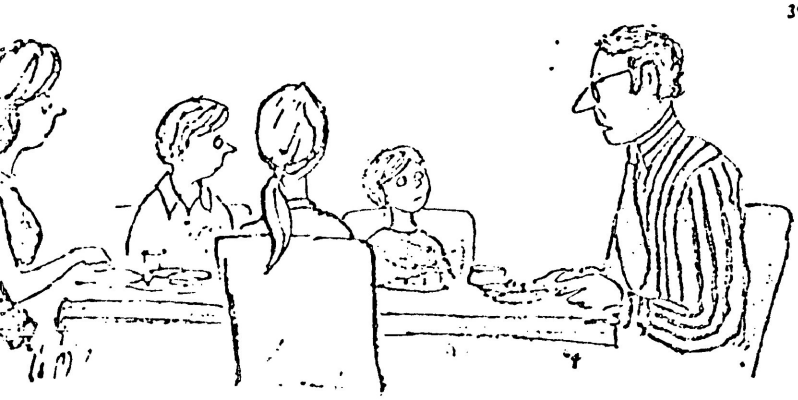
51 Ag.S.



54

53 L.S.

39



t was a most interesting and thought provoking
ment, Tommy. Now will you please leave the table
d go to your room."

56

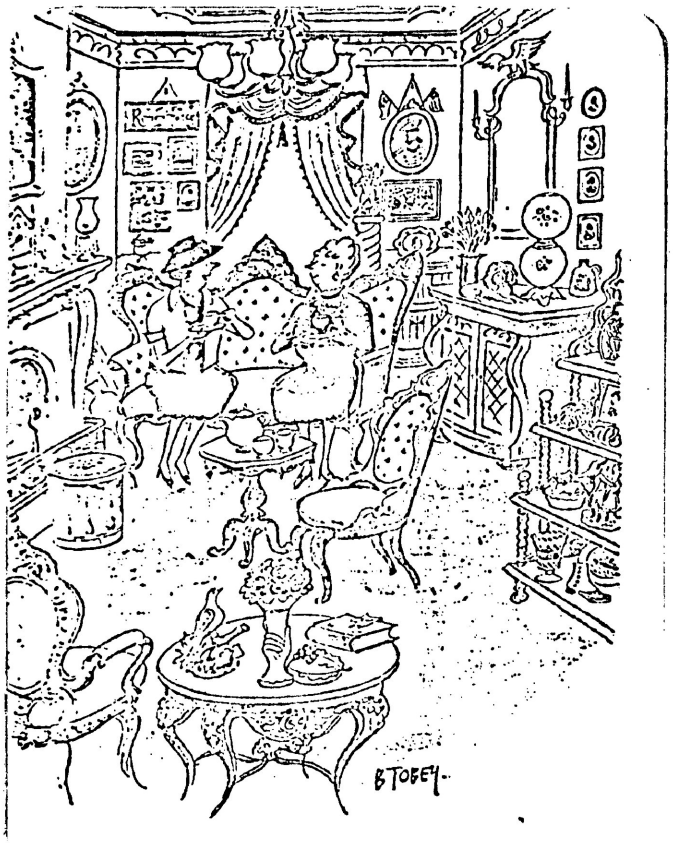
55 L.S.

38

"This is Barbara Walters. Fighting continues in the streets of Beirut..."

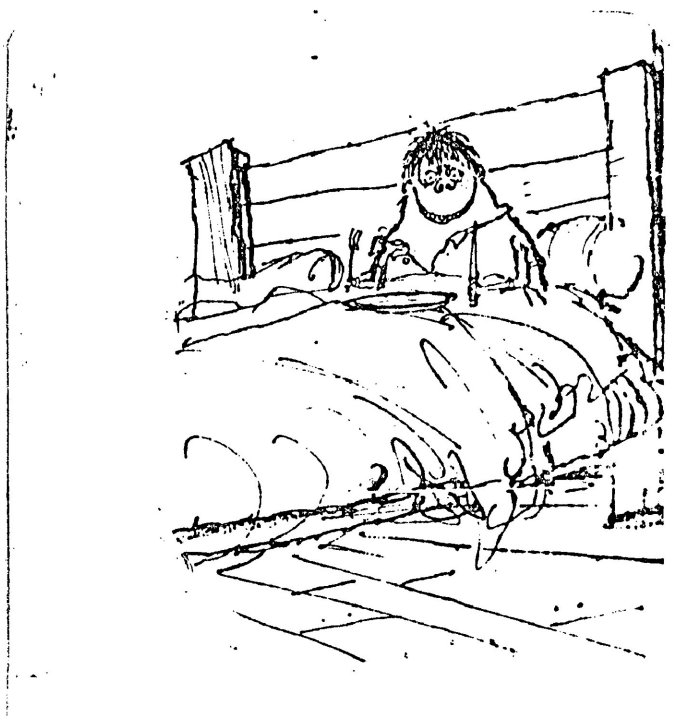
58

57 L.S.



"Well, Emmeline, what's new?"

60



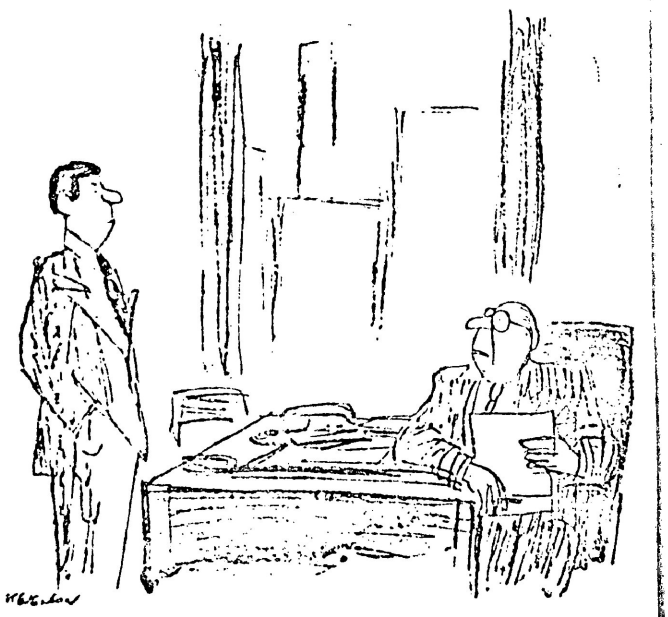
59 L.O-R.

phone is ringing... Let me go... I have to answer the phone!

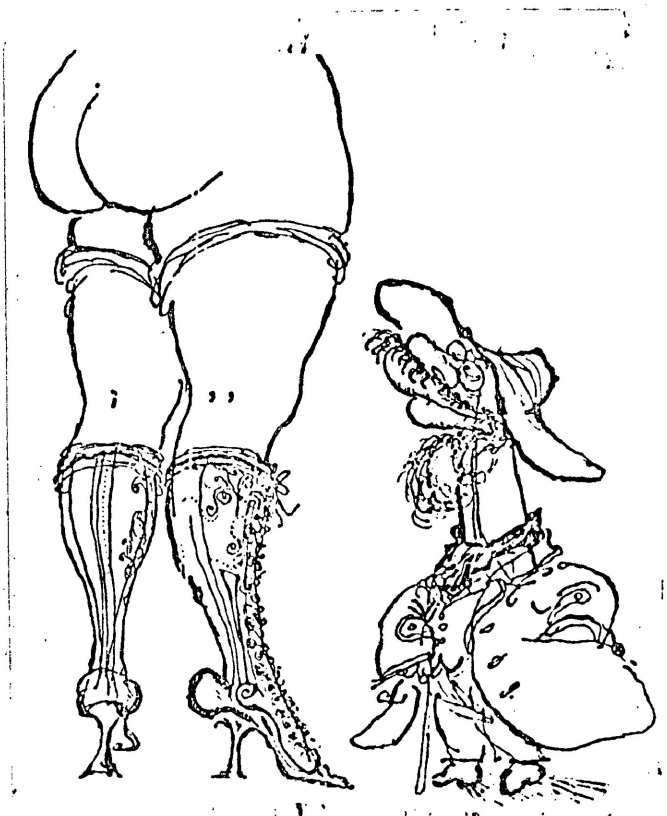
62

61 L.S.

64



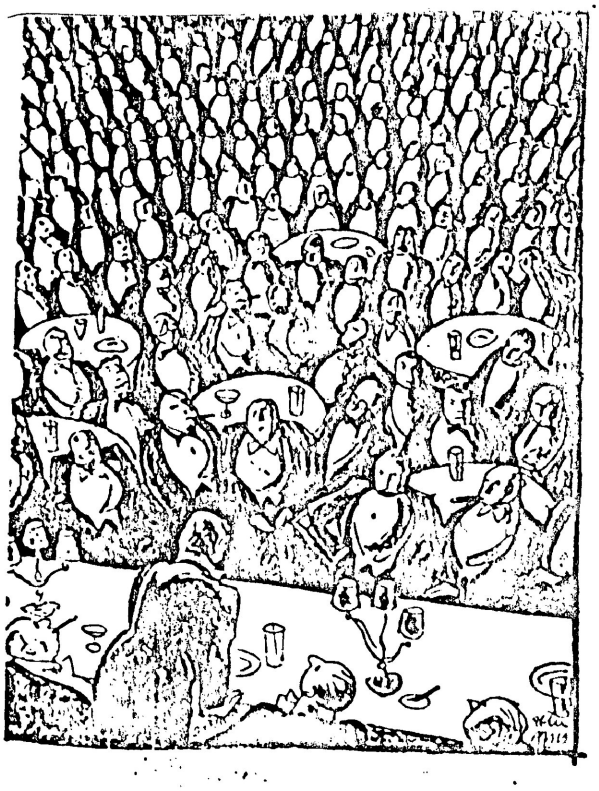
"This new, more positive self-image of yours, Clarkson—get rid of it."



63 L.E-V.

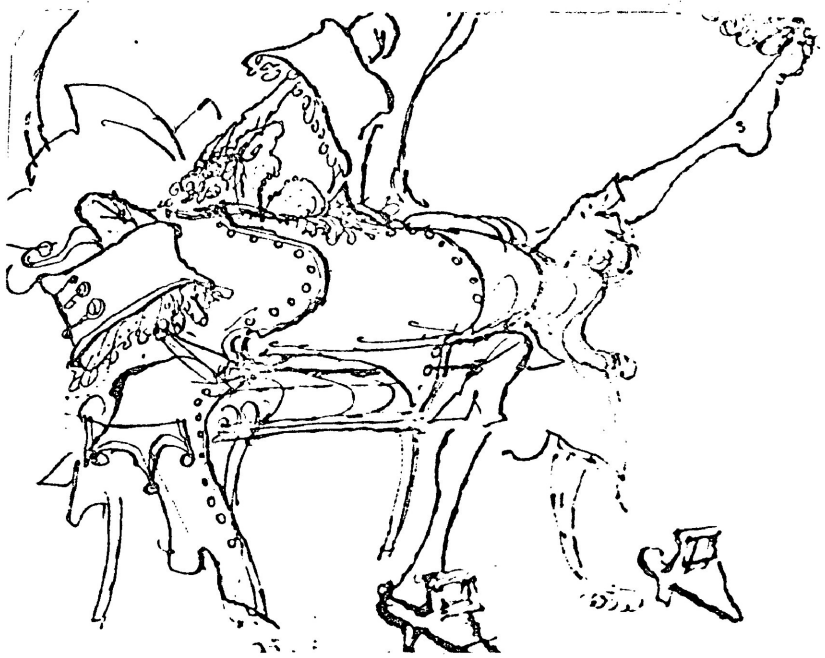
66 *"You're retired now. Relax."*

65 Ag.Ob.



"... and I may tell you, in strictest confidence..."

68

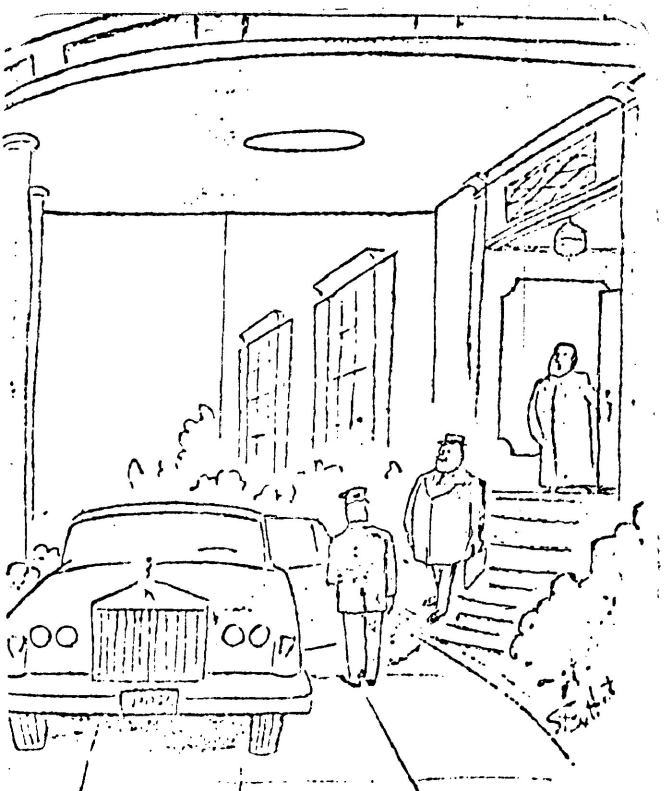


67 Ag.R.

"To the Editor:
I was amused to read the opinion expressed in . . ."

70

69 L.S.



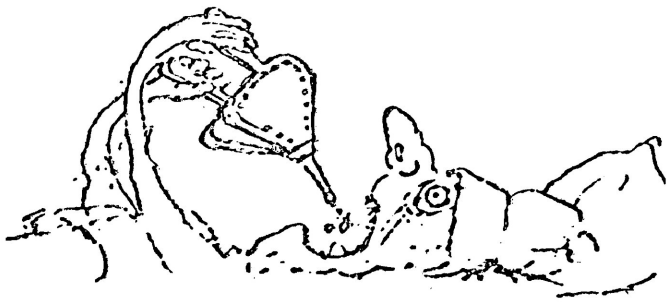
"Hang loose, Cridley."

72

71 L.E-V.

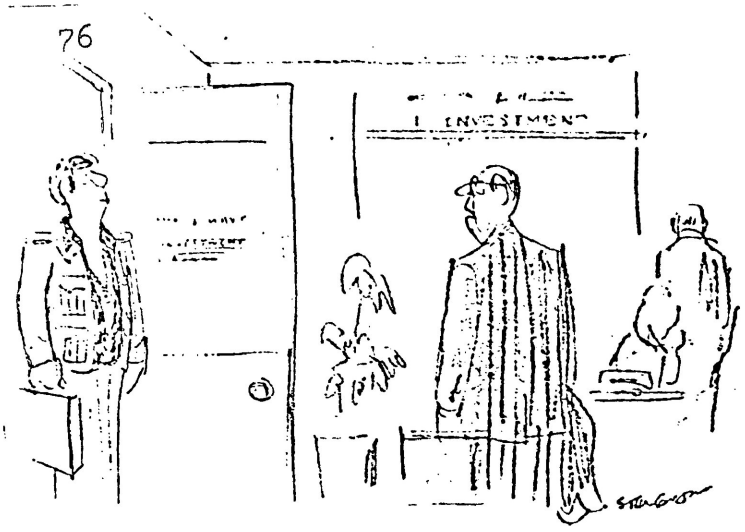
"Do you ever have days when you wish you had a saxophone?"

74



73 Ag.V.

76



"You look groovy, Heffernan—very groovy. Now go home and get dressed."

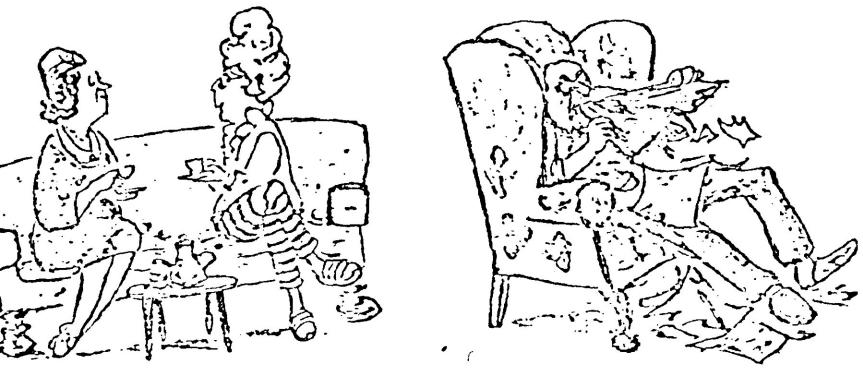
75 Ag.R.

"Oh, you beautiful doll,
You great, big beautiful doll."

78

77 L.S.

"come July, it will have been a twenty-five-year honeymoon."



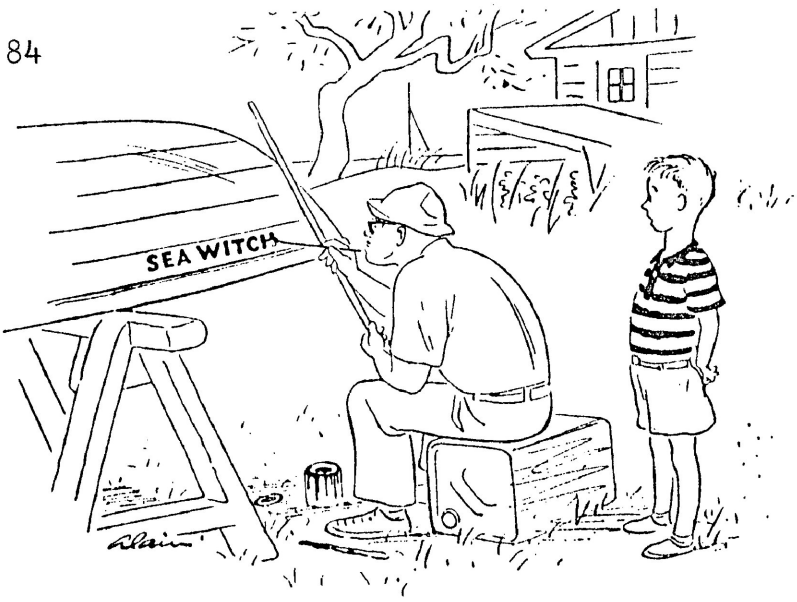
80

79 Ag.R.

82 *"I want to talk about some gut issues. First of all, I've never liked these draperies."*

81 L.E-V.

84



"Want to know something, Dad?"

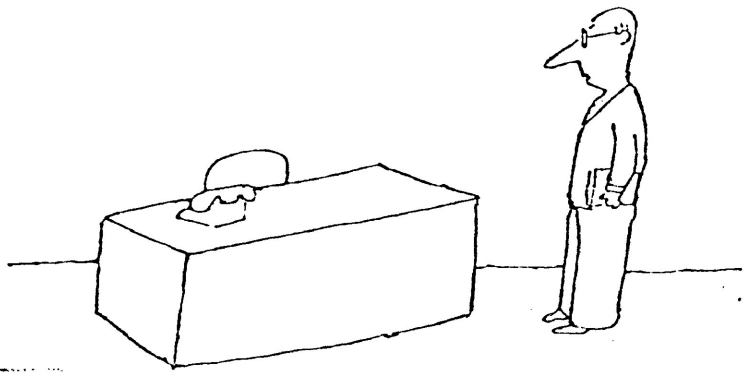
83 Ag.R.

"I'm very funny."

86

85 Ag.R.

"What's this, Jimmy. Are you absent today or something?"

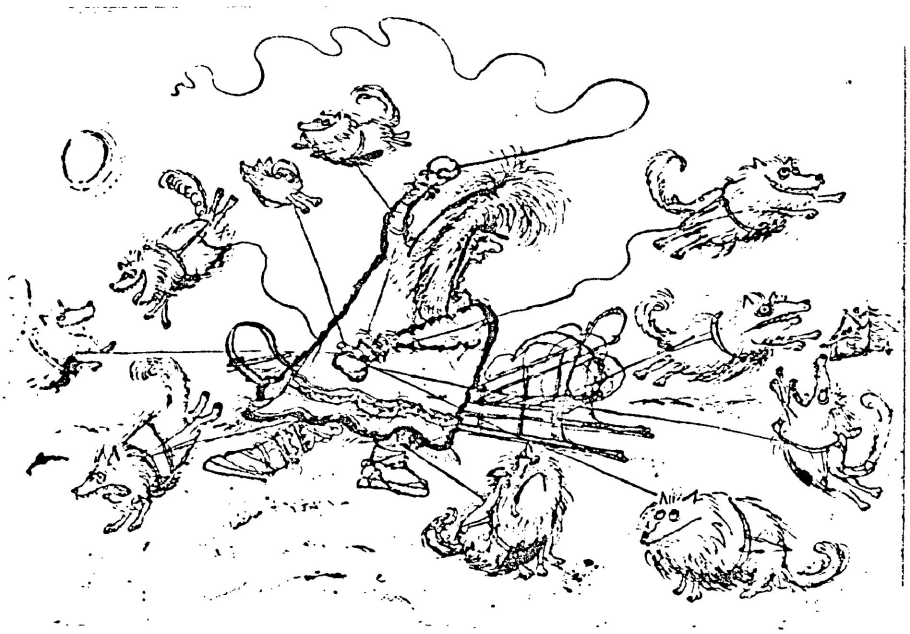


88

87 L.E-V.

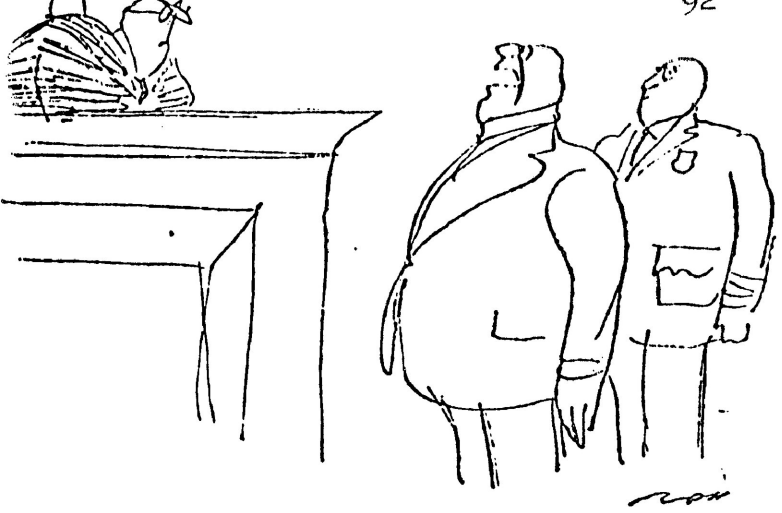
90

"Mr. Swinehart has just crossed Route 36 at Goshen Junction. We are all expected, in exactly eighteen minutes, to greet him as he comes down the driveway."

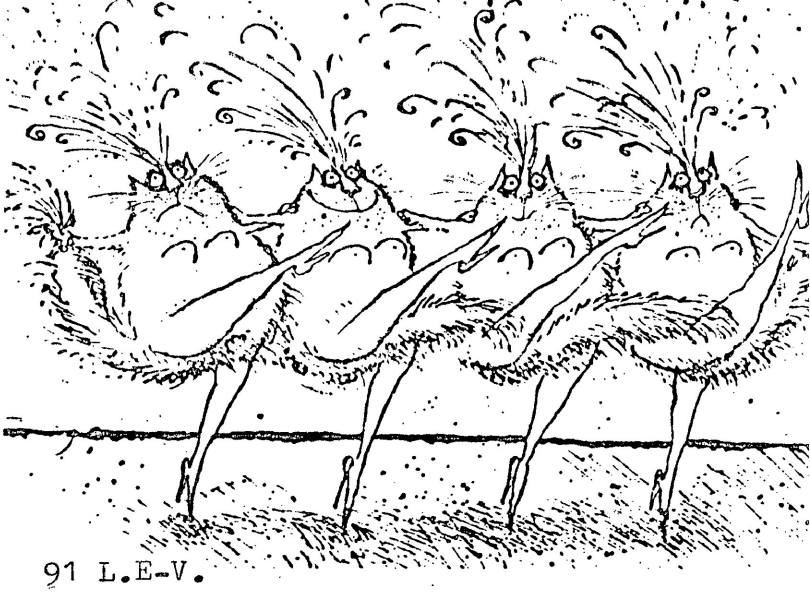


89 Ag.S.

92

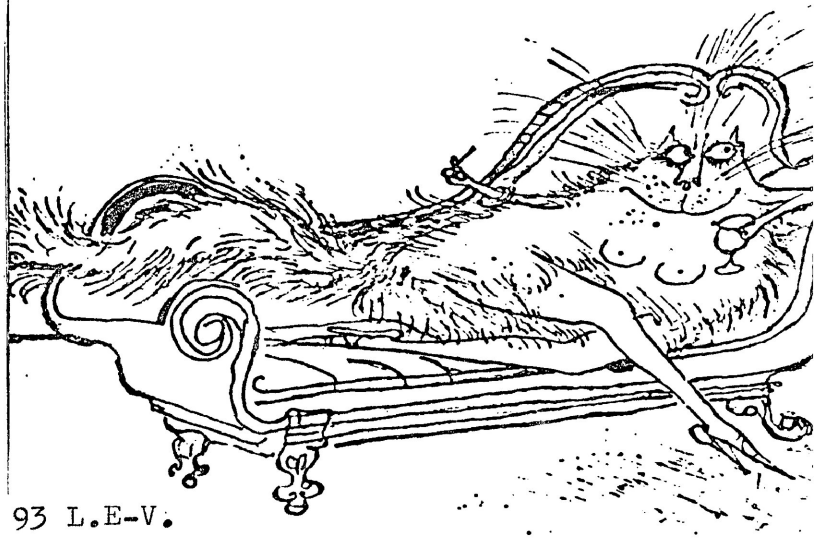


"Sure I shot him. What is that—a crime?"

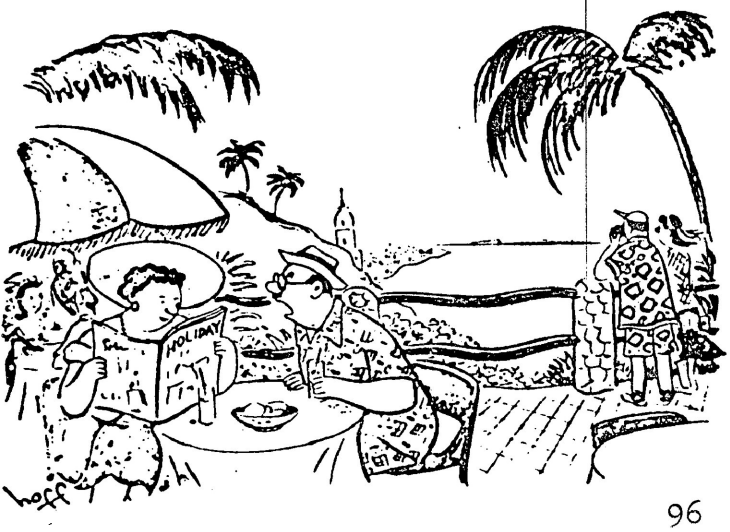


91 L.E-V.

94 "They want to book a six piece Dixieland band for a divorce."



93 L.E-V.

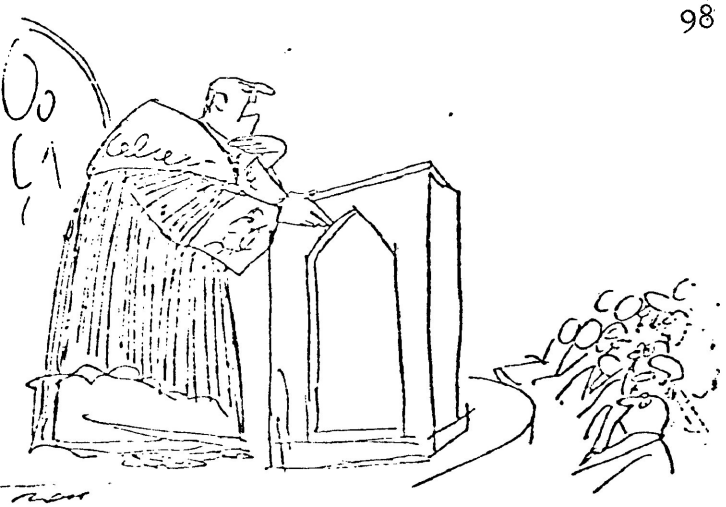


96

"Damn it, Alice, can't you leave well enough alone!"

95 L.O-Ag.

98

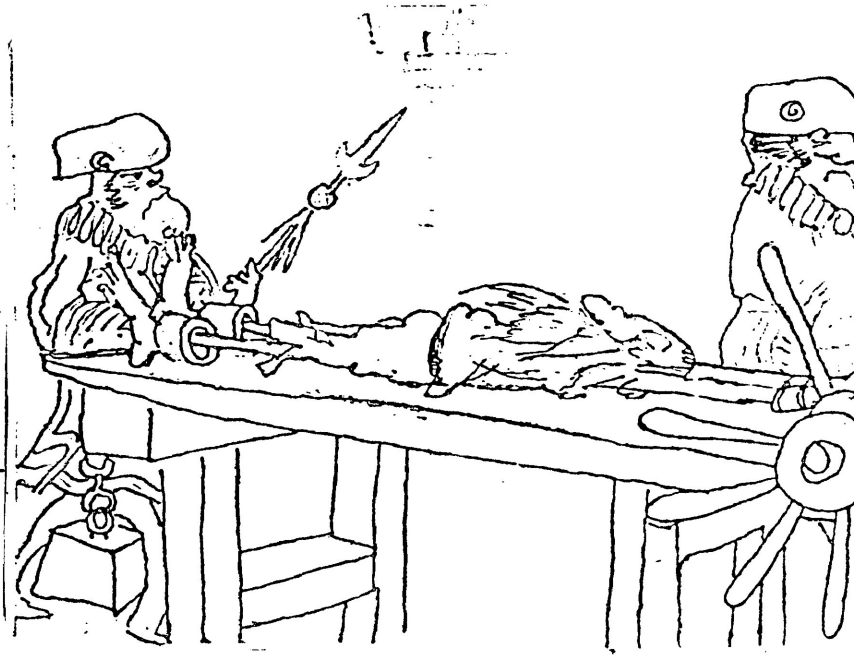


We are gathered together because we've had it up to here!"

97 L.S.

100

"True, he's one damn hell of a fine human being. But who needs him?"



99 Ag.Ob.

Appendix C

Rorschach Protocols

no. 18

I. " a bat; (else?) and lets see, upside down it reminds me of a double bridge; (else?) um, looks like a person like, with its eyes; ... a person with hands on the bottom of his face; (else?) nothing else."

II. " Oh boy ! a rabbit footprint, footprint of a rabbit; and a ceywon ship on Battlestar Galactica shooting lasers; ... a fire, smoke; ... in this white part it looks like an airplane; theres nothing else I can think of."

III. " Two fishes, swimming um, under two people on a small island;... a butterfly, but, a red butterfly between two people on the two small islands; ... it looks as if there were fireworks exploging; ... thats all."

IV. " Two feet without any, um, body; a jar with feet on it, like a cookie-pot, (?) yeah, like you know like one of those bean pots; now lets see ... some kind of fishing hook; thats all, this is hard, this one."

V. " this looks like a, bat, with a broken wing, with two broken wings; looks like a boat, of a reflesh, reflection; ... looks like a bird; ... looks like an antenna; ... thats all."

VI. " a geese with two missing wings; a guitar; a jackhammer; and, a boat with a reflection coming near an island; an airplaine; there thats all."

VII. " looks like four south americas, attached together, with a butterfly in between them; swallow-tailed butterfly; ... two horned animals, eating grass, one a reflection in the water."

VIII. " Oh ! this one's nice in color, a, two mountain lions, lions, going on a, pink mountain; ... a bear; ... a capsule, a space-capsule; thats all."

IX. "Two dragons gighting; forest fire; a bridge; a butterfly with rounded wings; thats all, (else?) no."

X. " (last) number ten, someone with a mustache and long hair, someone with a mustache sticking, up, with um; a, a picture in the middle of his forehead; ... two spiders; thats all, (else?) a crab, two crabs - laughs, thats all."

R No.	Form Level	Cr	Content = 24/48=50%	Formal Aspects =9/43=19%	Control & Defense	DD	DE	DI
I			L.2E.-V.					
II			Ag.2S. Ag.2S.					
III			Ag.2S.	C-ctm1. C.-a-c2				
IV			Ag.2R. Ag.2S. L.20.	C.-co1.				
V			Ag.2R.					
VI			Ag.2R.	Au.Lg1. Au.Lg1.				
VII			L2A. Ag.2S. L.20.	C-ctm1. C.-a-c2				
VIII			Ag.2S. Ag.2R.	C-arb1.				
IX			Ag.2S. Ag.2R.					
X			Ag.2S.	C-a-c2				

24 PPR/ 48 = 50% TPP.

no. 7

I. " I see something like a bird; (else?) like a masterpiece; a small kid kindergarten just painted; looks like somebody split it in half with an ax, looks like a a bat, with broken wings, now, it looks like a crab, (else?) no "

II. " looks like a plane, (loq.) its a fire coming out, like a plane got hit from the back, theres two horses here, I cant see anything else "

III. " there two men; a ribbon; two birds are flying from the sky; this looks like a cloud; here, this looks like these are giants and there's a small guy clapping, and nothing else "

IV. " looks like a giant, ready to draw his guns; and here its like when we saw those pictures of this guy about to draw a gun and show you the guy in front of him, that looks like it; and these look like two statues, two lion statues; it looks like a small guy passing under, and, a guy comes and pushes him and the big guy falls down (all?) yeah "

V. " looks like a flying bat, a butterfly, looks like a wishbone, looks sort of like a mountain, and thats all I can see "

VI. " I thought of something, but I forgot what it was, (smiles); looks like some kind of crab with tail, looks like a bird with whiskers; looks looks like they're breaking down a tower, and thats all I can see in this one "

VII. " looks, these two look like a head of a rhinocerus, this looks like a small butterfly with giant wings; and, these two, this looks, these two look like a pig; and this one (other left) looks like a wolf; thats all I see in this one "

VIII. " this looks like two ants, and it looks like a butterfly trying to hold its mother from falling, the hands are striking out; looks like here they're ripping a paper, thats all (who?) two small animals (what are they?) they look like animals nobody ever seen, they come from another planet "

no. 7 cont.

IX. " this thing looks like a martian flying saucer; this looks like a guy with his big head, his eyes, his nose and his big mouth, and that all I can see "

X. " this looks like a creature, with a pin on its nose; these two look like two animals trying to get the rope out; that looks like, a, its an animal holding on to this animal, like a rock, got stuck to his hands and fall, and he's holding on ; this looks like a rabbit's face; these look like two green caterpillars; thats all "

R No.	Form Level	Cr	Content = 14/52=27%	Formal Aspects = 3/52= 6%	Control & Defense	DD	DE	DDx
I			Ag.1R. Ag.2R.					
II			Ag.2R.					
IV			Ag.2S. Ag.2S. Ag.2S.					
VI			Ag.2S.					
VII			Ag.2S. (wk) Ag.2S. (wk)					
VIII			Ag.20b. Ag.2S.	Ctr.R.2				
IX			L.20. (wk)					
X			Ag.2R. Ag.20b.	Ctr.R.2 Ctr.R.2				

15 PPR/ 52 = 29% TPP.

Appendix D

Table 1

Primary and Secondary Percentages in Tests and Humor Selection

				Rorschach PriPro Percentages				Cartoon Selection Percentages			
Sno.	IQs	C.A.	M.A.	T.P.P.	Ag.	Li.	Fo.	Inc.	Car.	Ag.	Li.
1.	92	11.42	10.50	28	14	6	12	86	14	14	14
2.	89	11.83	10.52	22	10	4	8	50	50	48	52
3.	110	11.50	12.60	17	11	3	3	8	92	86	97
4.	113	10.50	11.86	28	9	8	12	82	18	38	3
5.	101	9.67	9.76	17	9	6	2	56	44	38	48
6.	105	9.58	10.05	14	5	4	5	50	50	38	59
7.	90	10.17	9.15	29	25	2	2	36	64	62	66
8.	114	8.50	9.69	10	3	7	0	26	74	81	69
9.	96	8.92	8.56	6	3	3	0	26	74	71	76
10.	109	8.83	9.62	29	15	0	15	32	68	62	72
11.	101	11.10	11.16	38	19	0	19	66	34	29	38
12.	91	10.92	9.93	17	17	0	0	62	38	29	45
13.	105	8.50	8.92	28	18	0	10	20	80	76	83
14.	82	9.90	8.13	38	20	6	11	46	54	81	31
15.	114	9.67	11.02	50	25	8	19	32	68	67	62
16.	106	10.25	10.86	31	11	0	20	2	98	100	97
17.	86	13.00	11.18	24	6	0	18	74	26	29	24
18.	102	9.00	9.18	44	27	2	17	20	80	76	72
19.	85	11.92	10.13	53	39	6	17	4	96	95	97
20.	120	10.09	12.09	12	8	0	4	22	78	81	76
21.	120	9.75	11.70	54	23	4	27	74	26	43	14
22.	80	13.58	10.86	29	23	0	6	2	98	100	97
23.	92	9.25	8.51	33	15	0	19	54	46	52	41
24.	123	9.08	11.17	21	18	0	6	22	78	90	69

$\bar{X}ca. = 10.37$

range = 8.5 to 13.6

Appendix E

Table 2

Correlation Coefficients between Primary Process Content Percentages in the Rorschach and Various Primary Process Cartoon Categories

Caricature PriPro Categories	Rorschach PriPro Content			
	Total	Aggressive	Libidinal	Formal
Total	-.148	.117	-.206	-.275
Aggressive	-.045	.144	-.103	-.181
Libidinal	-.127	.197	-.318	-.275

REFERENCES

Brodzinsky, D. M. (1975). The role of conceptual tempo and stimulus characteristics in children's humor development. Developmental Psychology, 11, 843-850.

Brodzinsky, D. M. (1977). Conceptual tempo as an individual difference variable in children's humour development. In A. J. Chapman and H. C. Foot (Eds.). It's a Funny Thing, Humour. Oxford: Pergamon Press.

Bruner, J. S., The course of cognitive growth. American Psychologist, 1964, 19, 1-15.

Dudek, S. Z., Lester, E. P., Goldberg, J. S. and Dyer, G. B., Relationship of Piaget measures to standard intelligence and motor scales. Perceptual and Motor Skills, 1969, 28, 351-362.

Dudek, S. Z., Regression in the service of the ego in young children. Journal of Personality Assessment, 1975, 39, 369-376.

Ehrenzweig, A., The Hidden Order of Art; a Study in the Psychology of Artistic Imagination. Berkeley, University of California Press, 1967.

Freud, S., Project for a scientific psychology. (orig. publ. 1895). In J. Strachey (Ed.). The standard edition of the complete psychological works of Sigmund Freud. London: Hogart, 1950, 24 vols.

Freud, S., The interpretation of dreams. (orig. publ. 1900). In J. Strachey (Ed.). The standard edition of the complete psychological works of Sigmund Freud. Vol. 5. London: Hogart, 1953, 24 vols.

Freud, S., The ego and the id. (orig. publ. 1923). In J. Strachey (Ed.). The standard edition of the complete psychological works of Sigmund Freud. Vol. 19. London: Hogart, 1953, 24 Vols.

Freud, S., Formulations on the two principles of mental functioning. (orig. publ. 1911). In E. Jones (Ed.). Collected papers. New York: Basic Books, 1959.

Freud, S., The unconscious. (orig. publ. 1915). In E. Jones (Ed.). Collected Papers. New York: Basic Books, 1959.

Freud, S., Jokes and their Relation to the Unconscious. (orig. publ. 1916). New York: Norton, 1960.

Gill, M. M., The primary process. In R. R. Holt (Ed.). Psychological Issues: Motives and Thought. New York: International University Press, 1967.

Grziwok, R., and Scodel, A., Some psychological correlates of humor preferences. Journal of Consulting Psychology, 1956, 20, 42.

Haggard, E. A., A projective technique using comic strip characters. Character and Personality, 1941, pp. 289-295.

Holt, R. R., Manual for the scoring of primary process manifestations in Rorschach responses. Mimeograph (10 rev. ed.). New York: Research Center for Mental Health, New York University, 1968.

Holt, R. R., The development of the primary process: a structural view. In R. R. Holt (Ed.). Psychological Issues: Motives and Thought. New York: International University Press, 1967.

Kagan, J., and Kogan, N., (1970). Individual variation in cognitive processes. In P. H. Mussen (Ed.), Carmichael's Manual of Child Psychology. Vol. 1: New York: Wiley.

Kaufman, A., Intelligent Testing with the WISC-R. Toronto: John Wiley, 1979.

Kris, E., The psychology of caricature. (orig. publ. 1934). In Psychoanalytic Explorations in Art. New York: International University Press, 1952.

Kris, E., The principles of caricatures. (orig. publ. 1934). In Psychoanalytic Explorations in Art. New York: International University Press, 1952.

McGhee, P., Cognitive development and children's comprehension of humor. Child Development, 1971, 42, 123-138.

McGhee, P., Cognitive mastery and children's humor. Psychological Bulletin, 1974, 81, 10, 721-730.

McGhee, P., The role of fantasy and reality cues in children's appreciation of incongruity humor. Merrill-Palmer Quarterly, 1975, 21, 1, 19-30.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., and Brent, D. H., Statistical Package for the Social Sciences, 2nd edition, New York, McGraw-Hill, 1975.

Piaget, J., The psychology of intelligence. London: Routledge and Kagan Paul, 1950.

Piaget, J., The stages of intellectual development in the child and adolescent. Le probleme des stades en psychologie de l'enfant. Symposium de l'Association psychologigue scientifigue de langue francaise. Paris, Presses Universitaires de France, 1956.

Rapaport, D., Gill, M. M., and Schafer, R., Diagnostic psychological testing. (Rev. ed.) New York: International Universities Press, 1968.

Rivard, R., and Dudek, S. A., Primary process thinking in the same children at two developmental levels. Journal of Personality Assessment, 1977, 41, 2, 120-130.

Rosen, V., Variants of comic caricature and their relationship to obsessive-compulsive phenomena. American Psychoanalytic Association Journal. 1963, 11.

Schafer, R., The expression of personality and maladjustment in intelligence test results. Annals of the New York Academy of Sciences, 1946, 46, 7, 609-623.

Schafer, R., Psychoanalytic Interpretation in Rorschach Testing. London: Academic Press, 1954.

Schultz, R., The role of incongruity and resolution in children's appreciation of cartoon humour. Journal of Experimental Child Psychology, 1972, 13, 456-477.

Sigel, I.E., and Brodzinsky, D.M. (1977). Individual differences: a perspective for understanding intellectual development. In H.L. Hom and P.L. Robinson (Eds.), Psychological Processes in Early Education. New York: Academic Press.

Singer, J.L., Imagination and waiting ability in young children. Journal of Personality, 1961, 29, 396-413.

Sollee, N.D., Verbal competence and the acquisition of conservation. Unpublished doctoral dissertation, Boston University, 1969.

Stuart, I.R., Iconography of group personality dynamics: caricatures and cartoons. The Journal of Social Psychology, 1964, 64, 147-156.

Stuart, I.R., Primary and secondary process as reflections of catastrophe: the political cartoon as an instrument of group emotional dynamics. The Journal of Social Psychology, 1964, 64, 231-239.

Strother, G.B., Barnet, M.M., and Apostolakos, P.C., The use of cartoons as a projective device. The Journal of Clinical Psychology, 1954, 10, 38-42.

Suls, J.M., A two-stage model for the appreciation of jokes and cartoons: an information-processing analysis. In J.H. Goldstein and P.E. McGhee (Eds.). The psychology of humour: theoretical perspectives and empirical issues. New York: Academic Press, 1972.

Wechsler, D., Manual for the Wechsler Intelligence Scale for Children-- Revised. New York: The Psychological Corporation, 1974.